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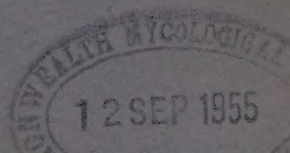
THE VETERINARY BULLETIN

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THE VETERINARY BULLETIN

Vol. 25]

September, 1955

[No. 9

DISEASES CAUSED BY BACTERIA AND FUNGI

CHUTE, H. L., WITTER, J. F. & ROUNTREE, J. L. (1954). **Bovine mastitis. I. Pathogenicity testing of micrococci (staphylococci).**—*Vet. Med.* **49**, 419-420. 2645

The tube coagulase test was applied to 1,288 cultures of staphylococci isolated from milk in 3 years. Most gave white β -haemolytic colonies of the *Staph. albus* type and few orange colonies (20%) were observed. The proportion of coagulase-positive cultures was 66%, 43% of these yielding a reaction in 6 hours and the remainder in 24 hours. The number positive increased during 1950-53, from 58 to 74%, possibly on account of the use of low concentrations of antibiotics.—MALCOLM WOODBINE.

FERRINI, R. & PICCOTIN, G. (1954). Osservazioni e rilievi sul tenore in azoto e sul C. D. "numero di caseina" nel latte di bovine clinicamente sane ed affette da mastite streptococcica. [Observations on the nitrogen content and the so-called "casein number" of milk from normal cows and cows with mastitis.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 815-817. [English and French summaries.] 2646

The "casein number" of milk, as described by Rowland (1938), is a figure obtained by dividing the percentage of casein nitrogen by the percentage of total nitrogen in the milk. The authors found that the "casein number" of milk from cows with streptococcal mastitis was lower than that of milk from normal cows.—R.M.

LUKAS, G. N. (1955). **Avian infectious hepatitis—a preliminary report.**—*J. Amer. vet. med. Ass.* **126**, 402-406. [Author's summary modified.] 2647

L. described a new disease of fowls in California to which he gave the name avian infectious hepatitis. The aetiological agent was a pleomorphic Gram-negative coccoid or yeast-like organism. In laying flocks the disease was characterized by a drop of 20-30% in egg production within 2-3 weeks, the outbreak lasting

for about 8 weeks. The disease was peracute in cockerels, and caused a significant retardation of growth of non-laying pullets. Decrease in food consumption during the whole course of the disease was not observed.

Lesions in the liver were classified as acute or chronic non-suppurative hepatitis: they differed from those described by Tudor [*V.B.* **25**, 757] as occurring in a liver degeneration of unknown origin in fowls. Dihydrostreptomycin sulphate injected i/m at a dosage of 50 mg. per lb. body wt. was apparently effective in controlling acute and peracute outbreaks.

LINDLEY, E. P. (1955). **Anthrax—the carrier state in goats.**—*Brit. vet. J.* **111**, 215-217. [Author's summary modified.] 2648

Two goats of the Kano brown variety, one of which had been inoculated with spore vaccine 3 weeks previously, died from anthrax 47 and 51 days after having been given a spore suspension of *B. anthracis* which proved to be rapidly fatal for other non-vaccinated goats inoculated at the same time with similar doses. L. postulated that the occurrence of such phenomena under natural conditions may explain the apparent occurrence of anthrax as an intercurrent infection.

GANTER, G. (1953). Contribution à l'étude du charbon cutané au Maroc. [A contribution to the study of cutaneous anthrax in Morocco.]—*Bull. Inst. Hyg. Maroc.* **13**, 53-101. [Abst. from abst. in *Bull. Hyg., Lond.* **30**, 128. (1955).] 2649

The backwardness of owners hinders the control of anthrax in Morocco where infected carcasses are used for food by the owners and the hides and skins are used commercially.

—T. E. GAIT RUTTER.

WRIGHT, G. G., GREEN, T. W. & KANODE, R. G. Jr. (1954). **Studies on immunity in anthrax. V. Immunizing activity of alum-precipitated protective antigen.**—*J. Immunol.*

- 73, 387-391. [Authors' summary modified.] 2650
- The authors described methods for alum-precipitation of the protective antigen of *B. anthracis*. The product induced effective immunity in rabbits, g. pigs, and monkeys. Significant immunity persisted for more than 3 months in rabbits and for more than 14 months in monkeys. Immunity in monkeys was effective against challenge both by the intradermal and respiratory routes. Alum-precipitated antigen deteriorated slowly when stored at 4°C., but considerable potency remained after storage for approx. 2 years. The product was devoid of toxicity when tested in mice, g. pigs, rabbits, and monkeys. Injection of the antigen into human beings was well tolerated; no severe reactions occurred and moderate local reactions were infrequent.
- SOKOL, A. (1953). Edemogénna aktivita akapulárných kmeňov *Bac. anthracis*, jej vzťah k virulencii a imunogénnej aktivite, ako aj jej význam pre výrobu živej vakcíny proti slezinovej sneti. [Use of non-capsulating, oedema-forming strains of *Bacillus anthracis* for the production of live vaccine.]—*Vet. Čas.* 2, 7-31. [In Slovak. German and Russian summaries.] 2651
- S. reported on the use of non-capsulating variants of *B. anthracis* for the preparation of live vaccine. Doses of 0.2 ml. of spore suspensions of these strains produced progressive oedema in mice, which spread from the site of inoculation and caused death within 4-8 days. A similar dose, however, produced immunity in g. pigs to subsequent challenge with lethal doses of virulent culture. One ml. of vaccine was estimated to contain about 100 millions of spores.—E.G.
- KNAYSI, G. (1955). The structure, composition, and behavior of the nucleus in *Bacillus cereus*. *J. Bact.* 69, 117-129. 2652
- Two types of nuclei may be formed by strain C₃ of *B. cereus*: primary and compound. During active growth the primary nucleus becomes filled with chromatin segregating into two terminal beads. The nucleus divides transversely towards its middle. A compound nucleus is formed by the association of two or more primary nuclei. It multiplies by division or budding. Three methods of demonstrating the nuclei are described.—W. R. BETT.
- POST, R. & VAN ULSEN, F. W. (1954). Twee gevallen van open longtuberculose bij runderen veroorzaakt door aviaire tuberkelbacillen (*Mycobacterium tuberculosis* var. *avium*). [Two cases of pulmonary TB. in cattle caused by avian type tubercle bacilli.]—*Tijdschr. Diergeneesk.* 79, 579-587. [English, French and German summaries.] 2653
- Avian type tubercle bacilli were isolated from 2 cows with open pulmonary TB. originating from "TB-free" herds. One cow had given a non-specific reaction, the other had never reacted. In one of the herds other cattle subsequently developed reactions to bovine type tuberculin varying from 2-6 mm. (compact swellings without oedema). The source of infection was not detected.—C. A. VAN DORSSEN.
- MILNE, A. H. (1955). An outbreak of tuberculosis in goats in Tanganyika. *Vet. Rec.* 67, 374-375. 2654
- An account of a small outbreak of TB. in goats, which M. believed was the first recorded occurrence of the disease in goats in Tanganyika. Cattle were probably the source of infection.—R.M.
- KAHANE, O. J. (1954). [Eradication of bovine tuberculosis in Israel.—*Refuah vet.* 11, 6-12. [In Hebrew. Abst. from English summary p. 56.] 2655
- During 1951-52 the tuberculin test was applied to 24,000 cattle in 183 herds in Israel. Of these 2.6% gave a positive and 6% gave a doubtful reaction.—T. E. GATT RUTTER.
- STÜNZI, H. (1954). Zur pathologischen Anatomie des Primärherdes bei der Katzentuberkulose. [Pathology of primary lesions in TB. in cats.] *Schweiz. Z. allg. Path.* 17, 770-775. 2656
- Bovine type TB. was found in 80 (6.3%) cats examined P.M. in Zürich since 1949. The primary lesion in 50 cases was in the intestine, in 7 in the skin, in 8 in the lungs, in 5 in the neck, in 3 in the conjunctiva.—W. R. BETT.
- PLUMMER, H. C. & BROWN, M. H. (1954). A study of acid-fast bacilli recovered from tuberculous monkeys.—*Canad. J. publ. Hlth.* 45, 296-300. 2657
- Of 7 strains of acid-fast bacilli recovered by g. pig inoculation, 6 were considered to be avirulent human type tubercle bacilli; the seventh was adjudged to be an avirulent bovine type.—R. GWATKIN.
- RICHEY, D. J., MACK, W. N. & STAFSETH, H. J. (1954). The hemagglutination reaction in avian tuberculosis.—*Poult. Sci.* 33, 345-350. [Abst. from authors' summary.] 2658
- The authors described a haemagglutination reaction using serum samples from tuberculous fowls and tuberculin sensitized sheep r.b.c.

The sera of five tuberculin-positive birds revealed titres of 1:32 or above.

Serum samples from 23 tuberculin reactors in which no lesions were demonstrable P.M. had agglutination titres from 1:4 to 1:128.

There was no significant increase in haem-agglutinins in the serum of apparently healthy fowls "stimulated" with tuberculin.

HIRSCH, J. G. (1954). **Charcoal media for the cultivation of tubercle bacilli**—*Amer. Rev. Tuberc.* **70**, 955-976. [French and Spanish summaries.] [Author's summary modified.] **2659**

H. described a medium for culturing tubercle bacilli, composed of inorganic salts, glycerin, asparagine, and activated charcoal. The growth of mycobacteria on charcoal media was remarkably improved when, in addition to the components above, enzymatic hydrolysate of casein and cholesterol were included and when a rather low conc. of agar was used. This medium appeared to promote the growth of tubercle bacilli as well as, or in some instances even better than, the egg or albumin media commonly employed. Oleic-acid-albumin and charcoal agar media have approx. the same capacity to initiate growth of human type tubercle bacilli from very small inocula. The characteristic features of microscopic and gross colony morphology of various strains of acid-fast bacteria are similar on these two media. Charcoal liquid media were also studied and found to be useful for certain laboratory purposes.

The charcoal agar medium has the following advantages over media containing egg or albumin:—economy, reproducibility, ready availability, ease of preparation, and stability to sterilization in the autoclave.

HIRSCH, J. G. (1954). **Studies on egg-yolk growth factors for tubercle bacilli**—*Amer. Rev. Tuberc.* **70**, 977-988. [French and Spanish summaries.] [Authors' summary modified.] **2660**

H. studied the heat-stable constituents of egg yolk which promote the growth of tubercle bacilli *in vitro*. For this purpose, fractions of egg yolk obtained by various chemical procedures were added to charcoal agar media, and the rate and extent of growth of various strains of tubercle bacilli on these media were then observed.

A growth promoting substance, identified as cholesterol, was present in the non-saponifiable portion of the egg-yolk solids soluble in diethyl ether. Under the conditions used for the tests, cholesterol stimulated moderately the

growth of an attenuated strain of bovine type tubercle bacillus, and exerted a slightly beneficial effect on the growth of several other strains.

When the residue remaining after extraction of egg yolk with organic solvents was added to charcoal media, striking enhancement of growth of all strains of tubercle bacilli resulted. The compound or compounds responsible for this effect have not been identified. H. suggested that such compounds act by neutralizing the toxicity for tubercle bacilli of the agar in the medium.

ŠULA, L., KUBÍN, Z., ZAVADILOVÁ, Z. & MEDULÁNOVÁ, L. (1953). **Nová očkovací látka proti tuberkulóze. IV. Sdělení: Očkování skotu. [A vaccine against TB. IV. Immunization of cattle.]**—*Ann. Acad. tchecosl. Agric.* **26**, 91-110. [Russian summary.] **2661**

An account of small-scale vaccination against TB. of cattle with the vole bacillus. At first a diagnostic dose of 2.5 ml. of the vaccine was injected s/c into one side of the neck. Young calves yielding a strong reaction were eliminated; non-reactors to this dose, and those in which the thickness of the skin reaction after 7-15 days was not more than 5 mm., were given a second dose, of 5 ml., into the other side of the neck. For calves older than 6 months and adult cattle the second dose was 7.5 ml.

Of 32 adult non-reactors to a conventional tuberculin test 21 reacted after a diagnostic dose of 2.5 ml. and a further 5 after a dose of 5 ml. of the vaccine.

There are tables showing that the incidence of TB. in slaughter cattle in Czechoslovakia which was 2.18-3.84% during 1921-30, had increased to 5.92% in 1950.—E.G.

BLOCH, H. & SEGAL, W. (1955). **Viability and multiplication of vaccines in immunization against tuberculosis**—*Amer. Rev. Tuberc.* **71**, 228-248. [French and Spanish summaries.] **2662**

In a comparative study of various anti-TB. vaccines in mice, viable vaccines were superior to killed bacterial preparations. B.C.G. vaccines killed by heat or phenol were inferior to living bacterial suspensions. H37Ra vaccine was equal or superior to B.C.G.—W. R. BETT.

ROLLE, M., KALICH, J. & MAYR, A. (1954). **Schutzimpfungen gegen Tuberkulose mit lebenden und toten Impfstoffen unter Berücksichtigung der Tuberkulinreaktion. [Vaccination against TB. with living and killed vaccines, with reference to the tuberculin reaction.]**—*Die Rindertuberkulose.* **3**, 90-96. **2663**

The authors stated that in the g. pig B.C.G. vaccine produces only a transient and weak immunity which may be enhanced and prolonged by re-inoculation with tubercle bacilli of low virulence. The tuberculin reaction and immunity are positive only while living bacilli are present in the body. Killed bacilli produce neither immunity nor tuberculin allergy.

—W. G. SILLER.

QUAGLIO, G. (1954). Studio istologico dei linfonodi regionali in vitelli trattati con vaccino diffondente antitubercolare (V.D.S.). [Histological study of the regional lymph nodes of calves inoculated with a vaccine containing killed tubercle bacilli and hyaluronidase.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 570-572. [English and French summaries.] 2664

Two calves were inoculated s/c or i/d with a vaccine containing killed tubercle bacilli; 3 calves were similarly inoculated with a similar vaccine to which hyaluronidase had been added. The calves were killed 19-45 days after vaccination, and the regional lymph nodes were examined histologically. Q. concluded that the addition of hyaluronidase to the vaccine facilitated the spread of tubercle bacilli from the site of inoculation, and set up a reaction more closely resembling the primary complex of natural infection.—R.M.

COLE, L. R. & FAVOUR, C. B. (1955). Correlations between plasma protein fractions, antibody titers, and the passive transfer of delayed and immediate cutaneous reactivity to tuberculin PPD and tuberculopolysaccharides.—*J. exp. Med.* **101**, 392-420. [Authors' summary modified.] 2665

G. pigs sensitized with tubercle bacilli offer a dual allergic response, in which 2 chemically distinct plasma fractions are concerned. These are:—(1) Antibody to tuberculopolysaccharide, which is located exclusively in fraction II (γ -globulin). This fraction will passively transfer systemic anaphylaxis and urticarial type skin reactivity to tuberculopolysaccharide, and contains the Middlebrook-Dubos antibody.

(2) Antibody to tuberculo-protein, which is contained exclusively in a new plasma fraction called fraction IV-10. By Cohn's Method X, fraction IV-10 is a part of fraction IV (α -globulin) and to a lesser extent V (albumin). This fraction will passively transfer to normal g. pigs a delayed type skin sensitivity to tuberculin P.P.D. which is maximal between 18 and 30 hours. It contains the Boyden antibody.

When fractions II and IV-10 are combined, the antibody to tuberculopolysaccharide inhibits the passive transfer of delayed type reactivity.

Combination of these two fractions does not alter their separate *in vitro* haemagglutinating properties. Adsorption of IV-10 with Boyden sensitized cells removes its ability to transfer delayed type tuberculin sensitivity. Adsorption of II with Middlebrook-Dubos-sensitized cells removes its capacity to effect passive transfer of immediate type reactivity to tuberculopolysaccharides.

MIDDLEBROOK, G. & COHN, M. L. (1955). Attenuation of isoniazid-resistant mutants of tubercle bacilli and host hypersensitivity to tuberculin.—*Proc. Soc. exp. Biol., N.Y.* **88**, 568-571. 2666

CF₁ mice were more susceptible to isonicotinic acid hydrazide-resistant strains of *Mycobact. tuberculosis* than hamsters. As neither of these species of animals was hypersensitive to tuberculin the authors concluded that susceptibility bore no relation to tuberculin hypersensitivity.—T. E. GATT RUTTER.

KRASNOW, I., WAYNE, L. G. & SALKIN, D. (1955). A microcolonial test for the recognition of virulent mycobacteria.—*Amer. Rev. Tuberc.* **71**, 361-370. [French and Spanish summaries. Authors' summary modified.] 2667

The authors described an improved procedure for the identification of virulent mycobacteria consisting of cultivating the organisms on filter paper or molecular filter membrane matrices, treating the microcolonies *in situ* with neutral red and with alkali, and observing them under the microscope. All stock virulent mammalian type tubercle bacilli and all strains of tubercle bacilli recovered from infected lungs were positive by both criteria. On the other hand, the known saprophytes as well as the chromogens and other mycobacteria of questionable pathogenicity were either neutral red-negative, non-corded, or negative in both respects.

By this technique it was possible to determine simultaneously the cytochemical reaction and the cord-forming ability of microcolonies of mycobacteria.

BLOCH, H. & NOLL, H. (1955). Study of the virulence of tubercle bacilli. The effect of cord factor on murine tuberculosis.—*Brit. J. exp. Path.* **36**, 8-17. 2668

The authors observed that while the "cord factor" [see *V.B.* **22**, 2362] by itself produced no lasting damage it had a specific enhancing effect on TB. in mice. TB. thus enhanced was more resistant to the therapeutic action of isonicotinic acid hydrazide.—T. E. GATT RUTTER.

HEIM, E. (1954). Östrogene Hormone als Faktoren der Resistenz gegen uterine Infektionen und Tuberkulose. [Role of oestrogens in resistance of the animal to uterine infections and TB.]-*Fortpflanzung*, 4, 102-105. 2669

Oestrogens cause structural and biochemical changes in the uterine connective tissue which may constitute an important factor in the resistance of an animal to uterine TB. and other infections.—W. G. SILLER.

HIRCH, A. & LAWRENCE, W. E. (1954). Experimental infection with *Mycobacterium johnei*. I. The effect of a low calcium diet on the disease in goats.—*J. comp. Path.* 64, 102-115. 2670

The authors reported experiments on the development of experimental Johne's disease in kids on a diet deficient in calcium.

—T. E. GATT RUTTER.

LARSEN, A. B., BAISDEN, L. A. & MERKAL, R. S. (1955). A comparison of regular intradermic johnin and a purified protein derivative of intradermic johnin on artificially and naturally sensitized ruminants.—*Amer. J. vet. Res.* 16, 35-37. [Authors' summary slightly modified.] 2671

A purified protein derivative of johnin, prepared by trichloroacetic acid-precipitation of Johne's bacilli culture filtrate, appears to be more specific than ordinary johnin when tested on artificially sensitized goats and cattle. This product was put in solution at 2.5 mg./ml. and injected i/d in 0.2-ml. quantities in each of 1,134 cattle in herds infected with Johne's disease along with equal quantities of ordinary johnin on the opposite side of the neck.

Both products gave negative reactions on 1,039 animals. Reactions classed as positive were elicited in 95 animals, 94 of which reacted to the precipitated product. Ordinary johnin elicited 78 reactions classed as positive, 6 classed as suspicious, and 11 classed as negative in these 95 animals. One animal reacted to ordinary johnin but not to the precipitated product.

201, 391A. & FARRAG, H. (1955). Incidence of *Corynebacterium pyogenes* among animals and birds in Egypt.—*Vet. Med.* 50, 219-220. [Authors' summary modified.] 2672

C. pyogenes has been isolated in Egypt from a variety of pyogenic infections occurring in different species of animals and birds.

In a few mares, this micro-organism caused metritis and was responsible for sterility; while it caused pyometritis and death in a bitch. It was almost invariably associated with suppurative

and gangrenous pneumonia in camels, sheep and pigs. In a case of traumatic reticulitis in a buffalo, it was isolated in pure culture from the pus evacuated from the abscess.

C. pyogenes caused septicaemia and death in an aviary bird, *Melopsthiacus undulatus* and it was isolated from the suppurative lesions in an outbreak among fowls.

CHAMBON, L. & DE LAJUDIE, P. (1954). Contribution à l'étude du métabolisme du bacille de Whitmore. [The metabolism of *Pfeifferella whitmori*.]—*Ann. Inst. Pasteur*, 86, 759-764. 2673

Continued subculture on chemically defined media confirms previous reports of the synthetic ability of the organism and shows that, in the presence of glucose, urea can be used as a sole source of nitrogen.—A. SEAMAN.

HUGHES, D. L. (1955). Arthritis in pigs. The experimental disease induced by *Erysipelothrix rhusiopathiae*.—*Brit. vet. J.* 111, 183-192. Appendix pp. 192-194. [Author's summary modified.] 2674

Arthritis was induced experimentally in all of 16 pigs given repeated i/v injections of cultures of *E. rhusiopathiae*. The inoculations failed to cause systemic signs of erysipelas other than arthritis. Blood cultures became negative 10 days after the last inoculation. On P.M. examination the organism was recovered from only one heart blood culture, in the first pig to be killed, 13 weeks after the last inoculation. However, affected joints yielded positive cultures up to 83 weeks after the last injection.

The arthritis was multiple (from 3 to 11 joints in each animal). Out of the total of 308 joints examined, 97 showed gross changes, and 52 of the 110 joints examined bacteriologically were positive for *E. rhusiopathiae*. The joints most frequently affected were elbow, hip, hock, stifle and knee, in that order. Visceral changes were trivial and scanty although regional lymph nodes often showed lymphadenitis and cultures from them were sometimes positive. H. discussed the relationship of these findings to arthritis occurring naturally in swine erysipelas.

CALLAWAY, H. P., CLARK, R. S., PRICE, L. W. & VEZEY, S. A. (1955). Field use of an adsorbed swine erysipelas bacterin.—*Vet. Med.* 50, 39-41. 2675

Nine thousand pigs were vaccinated with a killed culture vaccine prepared from 3 highly antigenic strains of *E. rhusiopathiae*. No controls were included in the trials, but losses were cut from one third or one half of the litters to nil following subcutaneous injection of 0.5 ml.

Four per cent of the pigs also received swine fever vaccine without diminishing the efficiency of the *E. rhusiopathiae* vaccine. A local swelling persisting for several months was occasionally seen at the site of injection.—A. SEAMAN.

HRUŠKA, K. (1952/53). Srovnávací studie o července vepřů. I. Bakteriální filtráty a zeslabování kmenů bakterií červenky vepřů II. Aktivní imunita proti července vepřů a nové cesty přípravy vakcín. III. pH a jeho vliv na metabolismus bakterií červenky prasat a nový způsob výroby očkovací látky proti této nakažlivé nemoci. [Comparative swine erysipelas research. I. Bacterial filtrates and reduction of virulence of strains of *E. rhusiopathiae*. II. Active immunization and preparation of vaccine. III. Effect of pH on the preparation of vaccine.]—*Ann. Acad. tchécosl. Agric.* **25**, 541-544; 544-554; & **26**, 261-272. [French and Russian summaries.] **2676**

I. Virulence for mice and pigeons of a broth culture of *E. rhusiopathiae* decreased markedly when kept for 8-12 months at 37°C. The pH increased from 7.6 to 9.0 during that period. An aluminium hydroxide adsorbed vaccine from this strain conferred immunity on pigeons. Filtrates of old cultures had no immunizing property.

II. H. described the preparation of a vaccine from serum-peptone broth culture to which 5% of acetic acid had been added. At a dosage of 0.5-2 ml. it conferred immunity on mice and pigeons, lasting about 18 days. Details are also given of the preparation of brilliant green and crystal violet vaccines and results obtained with them.

III. H. demonstrated the importance of pH for growth, virulence and immunizing capacity of *E. rhusiopathiae*.—E.G.

STAMP, J. T., WATT, J. A. A. & THOMLINSON, J. R. (1955). *Pasteurella haemolytica septicaemia of lambs*.—*J. comp. Path.* **65**, 183-196. [Authors' summary modified.] **2677**

The authors stated the pathological and bacteriological findings in lambs dead from septicaemia caused by *Past. haemolytica*, and described the cultural characteristics of the organisms isolated.

Pathogenicity tests were carried out in sheep.

MEDDA, A. (1954). Su di un terreno di coltura idoneo per l'isolamento e la conservazione della *Pasteurella ovisseptica*. [Culture medium suitable for the isolation and cultivation of ovine strains of *Past. septica*.]—*Atti Soc.*

ital. Sci. vet. **8**, pp. 801-804. [English and French summaries.] **2678**

M. found that a solid medium composed of bovine lung infusion (1 kg. lung in 3 litres water), peptone (9 g.), sodium chloride (3 g.), and agar (60-66 g.) was suitable for the cultivation of ovine strains of *Past. septica* and also for streptococci and brucella.—R.M.

GORDON, H. W., ORRIS, L. O., COOPER, N. S. & TOHARSKY, B. (1955). *Nodular-ulcerative skin lesions in rabbits*.—*Canad. J. Comp. Med.* **19**, 83-87. **2679**

In an epidemic of subcutaneous abscesses, lesions were reproduced by s/c, i/d and i/m injections of *Pasteurella septica*, group 2 mucoid, isolated from the abscesses. The usual septicaemic symptoms produced by this organism were absent although osteomyelitis was produced in one animal by i/v injection.

—R. GWATKIN.

SCHAR, M. & THAL, E. (1955). *Comparative studies on toxins of Pasteurella pestis and Pasteurella pseudotuberculosis*.—*Proc. Soc. exp. Biol., N.Y.* **88**, 39-42. [Authors' summary modified.] **2680**

Mice and rats were highly susceptible to the toxin of *Past. pestis* and of *Past. pseudotuberculosis*; rabbits and g. pigs were refractory to the former but succumbed to the latter toxin.

The former toxin caused haemoconcentration and a gradual fall of the blood pressure in rats. These changes are not demonstrable after administration of the latter toxin. The latter toxin could be neutralized by its antitoxic serum *in vivo* and *in vitro* in multiple proportions, thus showing it to be a true exotoxin, whereas the former toxin could be neutralized only to a negligible extent. No cross immunity to these two toxins was evident.

THAL, E. (1955). Immunisierung gegen *Pasteurella pestis* mit einem avirulenten Stamm der *Pasteurella pseudotuberculosis*. (Vorläufige Mitteilung). [Immunization against *Past. pestis* with an avirulent strain of *Past. pseudotuberculosis*. (Preliminary report).] *Nord. VetMed.* **7**, 151-153. [In German. English and Swedish summaries.] **2681**

G. pigs immunized with a single injection (0.5 ml. of 48-hour broth culture) of living avirulent *Past. pseudotuberculosis* Strain 32/IV withstood challenge with virulent *Past. pestis* at a dosage which killed all unvaccinated controls. The immunizing component is contained in the R antigen common to these two species.

—F.E.W.

MIRANDA, S. & BLANCO, M. M. (1954). Klebsiellosis equina en España. [*Klebsiella* infection of horses in Spain.]-*Bol. Zootec., Cordoba*, 10, 21-24. 2682

The authors described infections in horses from which *Klebsiella* was isolated.

—T. E. GATT RUTTER.

MURPHY, T. (1955). White scours of calves. Further studies on its prevention in County Limerick.—*Irish vet. J.* 9, 60-67. [Author's summary modified.] 2683

The feeding of 8-12 million I.U. of vitamin A and 2-3 million standard units of vitamin D₃, during the week before calving, to cows did not reduce the average incidence of white scour in their calves when compared with that of the previous year.

Prophylactic administration of $\frac{1}{4}$ lb. of a chlortetracycline (aureomycin) supplement (containing 1.8 g. of available aureomycin per lb.) daily to 404 calves on 22 premises from birth until eight days old was followed by a lower incidence of white scour than that present on 23 farms, where 398 calves received half this quantity of the supplement over a similar period or on 2 farms where 0.5 g. of streptomycin sulphate was also administered for a similar period to 180 calves.

The marked fall in the incidence of white scour, which followed the adoption of improved husbandry methods on five premises, where 114 live calves were born, when compared with that present during the previous year, indicates that husbandry methods play a considerable part in the white scour problem in this area.

RUSCHMANN, E. (1954). Tierexperimentelle Untersuchungen zur Frage der Penicillin-toxizität. I. Der Einfluss des Penicillins auf den graviden Organismus insbesondere den des Meerschweinchens. II. Die Colienteritis des Meerschweinchens. III. Serologische und biochemische Untersuchungen der Meerschweinchen-pathogenen Coli-Stämme. [Animal experiments on the toxicity of penicillin. I. Action of penicillin on pregnant animals, particularly g. pigs. II. *Bact. coli* enteritis in g. pigs. III. Serological and biochemical investigations into strains of *Bact. coli* pathogenic for g. pigs.]-*Z. Hyg. InfektKr.* 140, 248-263; 265-293 & 333-349. 2684

I. R. found that the death rate among pregnant g. pigs given a single large injection of penicillin (17,000 units/kg.) was significantly higher than that among non-pregnant g. pigs similarly treated. Death was caused by enteritis (*Bact. coli*).

II. He investigated changes in the intestinal flora of g. pigs following injections of penicillin or chlortetracycline (aureomycin). Death occurred as a result of the replacement of the normal flora by *Bact. coli* and other Gram-negative organisms.

III. He investigated the strains of *Bact. coli* which occurred in g. pigs which developed enteritis following the administration of penicillin [*vide II supra*]. He found that the condition could not be attributed to a particular pathogenic strain of *Bact. coli*: various strains, particularly lactose-positive strains, were present in great numbers. He stated that *Bact. coli* is rare in, or absent from, the intestine of the normal g. pig.—A.S.

SUMMERS, G. A. C. & LINTON, A. H. (1954). *Shigella flexneri* enzootic in captive rhesus monkeys.—*Brit. med. J.* July 31st, 283-285. [Authors' summary modified.] 2685

An epizootic appeared to attack a new colony of 103 young monkeys which arrived in Bristol Zoo in bad weather in March 1951. Sporadic deaths continued to occur into 1953. *Sh. flexneri* type 103 (4a) was isolated from 26 of the 63 monkeys which died. *Sh. flexneri* type 103 z (4b) was isolated from a single monkey and *Salmonella typhi-murium* from another. The authors discussed the relation of this finding to other concurrent conditions, including *Haemophilus influenzae* infection, helminth infestation, and to pregnancy, but emphasized the association of colonic ulceration with the finding of *Shigella* organisms, and considered it probable that most of the deaths were due to this infection.

LÜTJE, F. (1955). Neuere Gesichtspunkte auf dem Gebiet der Salmonellose des Kalbes und des Rindes, sowie in bezug auf die Bakterienausscheidung und das vegetative Dasein der Salmonellen in der Umwelt. [*Salmonella* infection in calves and adult cattle.]-*Berl. Münch. tierärztl. Wschr.* 68, 39-43. [English summary.] 2686

L. gave his views on common sources of salmonella infection in cattle. He suggested that open water supplies, contaminated with sewage, are a common source.—W. G. SILLER.

HENNING, M. W. (1954). On the chemotherapy of calf paratyphoid.—*J. S. Afr. vet. med. Ass.* 25, No. 4, pp. 1-7. 2687

H. successfully treated calves aged 7 days, artificially infected with *Salmonella dublin*, by the i/m injection of 1 g. chloramphenicol in oil twice daily for 7 days, or by administration

in the milk of 0.5 g. furazolidone twice daily for 7 days. *S. dublin* was isolated from the faeces of untreated controls but not from calves which had received treatment.—R.M.

MACLEOD, D. R. E. (1954). Immunity to salmonella infection in mice.—*J. Hyg., Camb.* **52**, 9-17. [Author's summary slightly modified.] **2688**

M. described experiments in mice on the immunity produced by vaccines against *Salmonella dublin* and *S. typhi-murium*. When challenged by intraperitoneal inoculation, 40-80% of vaccinated mice survived a dose that killed almost all controls. This level of immunity appeared to last for 5-7 months. On the other hand, when challenged by the oral administration of cultures or by contact with infected animals, protection afforded by the vaccine was of a comparatively low order. Resistance to infection by an artificial route was, therefore, not a measure of resistance to infection by the natural route.

STAACK, H. H. (1954). Epidemiologische Beobachtungen bei Erkrankungen durch *Salmonella infantis*. [Epidemiological observations on *S. infantis* infection in human beings.]-*Z. Hyg. InfektKr.* **139**, 455-462. **2689**

Following an outbreak of *S. infantis* infection in Germany, S. isolated the organism from the faeces of fowls at a poultry farm and a hatchery in the district, and also from the faeces of the farmer's young son who was, however, in good health. He discussed the possibility that human infection resulted from the ingestion of insufficiently cooked eggs, but he failed to isolate *S. infantis* from 60 new-laid eggs from the farm.—E.G.

AGRIMI, P. (1954). Sulla struttura antigenica di *Salmonella pullorum* — identificazione dei vari tipi antigenici mediante la prova di sedimentazione con ammonio solfato. [Identification of serological types of *S. pullorum* by means of the ammonium sulphate sedimentation test.]-*Atti Soc. ital. Sci. vet.* **8**, pp. 699-702. [English and French summaries.] **2690**

The author applied the macroscopic ammonium sulphate test for distinguishing antigenic forms of *S. pullorum*, described by Williams [*V.B.* **24**, 42], to 23 strains of the organism isolated in Italy. He found that the results agreed with those of serological tests.

—R.M.

GALTON, M. M., MACKEL, D. C., LEWIS, A. L., HAIRE, W. C. & HARDY, A. V. (1955). Salmonellosis in poultry and poultry processing

plants in Florida.—*Amer. J. vet. Res.* **16**, 132-137. [Authors' summary modified.] **2691**

Bacteriological examination of 155 fowls reacting to pullorum disease yielded 67 cultures positive for *S. pullorum* and 3 for other salmonella. During the same period 434 fowls and turkeys submitted for diagnosis of illness yielded 63 salmonella of which 35 were *S. pullorum*.

The authors also investigated the prevalence of salmonella in three poultry processing plants. Out of 1,244 cultures taken from materials in the plants, 196 were positive for salmonella. The highest percentage of positive findings was from the edible viscera and from the table on which edible viscera were wrapped. In addition, 126 out of 507 cloacal swabs from ducks in another processing plant yielded salmonella. A total of 24 serological types, including one new type, were isolated.

SCHOENAERS, F., KAECKENBEECK, A. & SAFAR POOR, H. (1955). A propos de la typhose aviaire et de la pullorose. [Fowl typhoid and pullorum disease.]-*Ann. Méd. vét.* **99**, 40-50. **2692**

The authors discussed the biochemical, immunological and pathological similarity between *Salmonella gallinarum* and *S. pullorum* and arrived at the conclusion that the diseases caused by these organisms (viz., fowl typhoid and pullorum disease) should be regarded as one and the same infection under the name "typhose aviaire" (avian typhoid). [The epidemiology of the two diseases is, however, very different.]

—T. E. GATT RUTTER.

HILL, C. H., GARREN, H. W., KELLY, J. W. & BARBER, C. W. (1955). Influence of high levels of vitamins on resistance of chicks to fowl typhoid.—*Proc. Soc. exp. Biol., N.Y.* **88**, 535-537. **2693**

The mortality rate from experimental *S. gallinarum* infection in chicks was reduced by the administration of 10 times the normal vitamin requirements plus 0.1% ascorbic acid.

An excess of fat-soluble vitamins, of water-soluble B vitamins or of ascorbic acid alone had no effect.—T. E. GATT RUTTER.

FLANERY, D. (1954). *Salmonella newington* in chickens in New Zealand.—*N.Z. vet. J.* **2**, 134-135. **2694**

F. described an outbreak of salmonellosis in a batch of 200 chickens, 2 weeks old, in which 50 birds died after they had had symptoms of paralysis and opisthotonos for 2 to 3 hours. The causal organism was identified as *S. newington*. This has previously been isolated in New Zealand from man but not from chickens.—E. A. GIBSON.

BRUNER, D. W. (1954). **Induced variation in the specific phase of *Salmonella litchfield***—*J. Bact.* **67**, 127-128. 2695

B. stated that when *S. litchfield* (6,8:lv-1,2) was cultured in semi-solid media containing v and 1,2 antisera, its antigenic structure was transformed, in a few cases, to that of *S. fayed* (6,8:lw-1,2). It was not possible to revert the induced lw phases to lv forms.—E. A. GIBSON.

LEDERBERG, J. & EDWARDS, P. R. (1953). **Serotypic recombination in *Salmonella***.—*J. Immunol.* **71**, 232-240. [Authors' summary copied verbatim.] 2696

The technique of genetic transduction has been applied to the exchange of flagellar antigens among various serotypes of *Salmonella*, somatic groups B and D. Each transduction resulted in the substitution or transfer of a single antigenic phase, whether to or from a monophasic or diphasic recipient strain. The types generated included several serotypes previously discovered and named, and others which so far have no place in the Kauffmann-White scheme. However, the precise role of transduction in the natural evolution of serotypes must be settled by further studies.

In the present material, the transduction of a flagellar antigen was unaccompanied by any other alterations in antigenic structure or biochemical behaviour, so far as studied. In a few instances, transduction revealed the character of antigenic determinants which were not directly expressed in the source strain. Thus, the presence of an *a* phase in *S. abortus-equi* (IV XII [a]: *enx*) was confirmed, while *S. gallinarum* proved to carry a determinant for the *gm* antigen, which is unexpressed in the absence of flagella. In no case were the component factors of the complex antigens of a single phase (viz. 1,2 . . . , *e,h* . . . , *g,p* . . . , *e,n,x* . . . , 1,5 . . .) separated in transduction, and such tests as were made indicated that the transduced antigen was identical with the phase of the source strain.

REDAELLI, G. (1954). **Ricerche sull'attività antigene di salmonelle trattate con ultrasuoni. [Antigenic activity of salmonella exposed to ultrasonic waves.]**—*Atti. Soc. ital. Sci. vet.* **8**, pp. 764-766. [English and French summaries.] 2697

The agglutinin titres of the serum of rats inoculated with mixed salmonella cultures which had been exposed to ultrasonic waves (no details given) were higher than those obtained by the inoculation of formalized or heat-inactivated cultures.—R.M.

FRANK, J. F. & WRIGHT, G. W. (1955). **Susceptibility of salmonella organisms to formaldehyde fumigation.**—*Canad. J. comp. Med.* **19**, 71-75. 2698

Artificially infected pieces of string and of egg shell were used in the tests. Fumigation with 1.5 ml. of formalin per cu. ft. killed all organisms in 20 min. while some survived 10 min. When 1 ml./cu. ft. was used a period of 30 min. was required to kill all organisms. *S. pullorum* appeared to be more susceptible than any of the other *Salmonella* tested.

—R. GWATKIN.

ANON, (1954). **[Brucellosis in farm animals. (A symposium.)]**—*Veterinariya, Moscow*, **31**, pp. 23-30. [In Russian.] 2699

Of the 25 papers in this symposium, 18 dealt with comparison of various methods of diagnosis and their modifications, and 4 with vaccination. No important new point emerged. One paper on therapy reported successful treatment of sheep with a powder preparation of silver fir, given orally. [It is not stated from what part of the tree the powder was produced.]

—A. MAYR-HARTING.

ENGELHARD, W. E. & CARLISLE, H. N. (1955). **Conglutination complement adsorption test in diagnosis of bovine brucellosis.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 670-673. 2700

The authors described a congrutination complement adsorption test for the diagnosis of brucellosis in cattle. The degree of complement fixation varied in the pig, cat and horse, the last mentioned giving the highest titres. Cattle serum was less anticomplementary to horse than to g. pig complement. By means of the test it was occasionally possible to detect brucella antibody in bovine sera which were negative to the rapid plate agglutination and the haemolytic complement-fixation tests.

—T. E. GATT RUTTER.

RITTER, H. (1954). **Studien über Auswertungen serologischer Reaktionen in prognostischer Beziehung bei der Brucellose des Rindes. [Evaluation of serological reactions for prognostic purposes in *Brucella* infection of cattle.]**—*Mh. Tierheilk* **6**, 257-275. 2701

By comparing the results of the agglutination tests with those of the flocculation test for *Br. abortus* and repeating these tests at short intervals the state of infection in the herd and the individual animal may be ascertained. It is thereby possible to determine the time of infection, to diagnose an imminent abortion and to detect chronic carriers.—W. G. SILLER.

ECKELL, O. A., VAGNI, O. & ANAYA, J. S. (1954). Variaciones de los títulos aglutinantes en caballos reactores positivos a la prueba de Huddleson. [**Variations in agglutinating titre in horses reacting positively to the agglutination test for brucellosis.**—*Rev. Vet. Milit., B. Aires*, 2, 179-183. [Only abstr. given.] [English summary in *Summ. of Communications, II Ind Pan-Amer. Congr. vet. Med.*, S. Paulo, April 3-10, 1954. Sect. A. p.16. Mimeographed.] **2702**

In 262 horses which gave positive reactions to the rapid plate agglutination test and were re-tested after 12 and 15 months, titres usually decreased or remained at the original level. The authors gave details of agglutination test histories of some horses inoculated with *Brucella* antigens.—H. E. HARBOUR.

HELVIG, R. J. & KUTTLER, A. K. (1954). The effect of Grade A milk requirements on the national brucellosis eradication program.—*Proc. 57th Ann. Meet. U.S. live Stk sanit. Ass.* 1953, pp. 293-299. **2703**

A state law provides that all Grade A milk sold in Illinois after January 1955 must be from brucellosis-free herds. This has ensured concerted efforts by stockmen to eradicate the disease. The authors outlined the methods adopted and enumerated the reasons for the adoption of the eradication policy.

—W. S. MARSHALL.

NIKOLAEV, V. A. (1953). [Vaccination of pigs for the control of brucellosis.]—*Veterinariya, Moscow*, 30, No. 12. pp. 16-19. [In Russian.] **2704**

Experimental vaccination of pigs with a *Br. suis* formolized vaccine was started in the Leningrad area in 1949, and 5,000 had to date been vaccinated. The incidence of abortion among vaccinated animals was one third to one sixth less than in controls.—F. A. ABBEY.

BENDTSEN, H. (1954). On type differentiation of brucella bacteria.—*Nord. VetMed.* 6, 355-365. [In English. German and Danish summaries.] **2705**

B. discussed routine procedures for brucella typing. He tested the use of the following:—examination of the degree of dissociation, the urease activity, hydrogen sulphide formation, and tolerance for basic fuchsin, thionin, methyl violet, pyronin, and sodium diethyldithiocarbamate. He tabulated the characterization of the four main types of *Brucella* from results using these methods with slight modifications.

—A. ACKROYD.

BERMAN, D. T., REDFEARN, M. S. & SIMON, E. M. (1955). Establishment of colonial variants of brucellae in vivo.—*Proc. Soc. exp. Biol., N.Y.* 88, 526-528. [Authors' summary modified.] **2706**

Variants of *Br. suis* and *Br. abortus* established themselves at certain times in the tissues of g. pigs inoculated with smooth cultures. Variants of *Br. abortus* were recovered from the fluids of aborted bovine foetuses but not from the milk of the aborting cows.

BERMAN, D. T. (1953). Trace elements in brucellosis.—*J. Amer. med. Ass.* 153, 643-645. **2707**

B. stated that the evidence furnished by controlled studies carried out at Wisconsin did not support certain claims that trace elements have a prophylactic or therapeutic effect on brucella infections in cattle. From the results of such controlled experiments on cattle he inferred that trace element supplements in the diet would not be effective in human brucellosis, the control of which depends upon control and eradication of the disease in livestock.

—W. R. BETT.

WUNDT, W. & GEHRING, K. (1955). Über eine Infektion von Rindern mit *Brucella melitensis* in Südwürttemberg. [*Brucella melitensis* infection in cattle in South Württemberg.]—*Tierärztl. Umsch.* 10, 130-132. **2708**

An account of *Br. melitensis* infection in a shepherd, a veterinary surgeon and his assistant, and a farm labourer in South Württemberg, during 1953-54. The infection was traced to a migrant flock of 274 sheep in which 23 ewes had aborted prior to the outbreak in man. When tested later, 68 of the sheep yielded positive *Br. melitensis* titres.

The veterinary surgeon and his assistant, and presumably the labourer, became infected from cows of a herd which, it was established, had shared winter quarters with the sheep.

Br. melitensis was recovered from the cows' milk and from the assistant's blood.—E.G.

FARINA, R. (1954). Osservazioni su agnelli nati da pecore sperimentalmente infettate di brucellosi ed eliminatrici di germi. [**Observations on lambs born to ewes infected with *Br. melitensis*.**—*Atti Soc. ital. Sci. vet.* 8, pp. 785-788. [English and French summaries.] **2709**

Four lambs born to ewes experimentally infected during pregnancy with *Br. melitensis* were reared by the ewes in an infected stall.

F. was unable to detect in the lambs the presence of agglutinins or allergy towards *Br. melitensis* between 8 days and 15 months of age.—R.M.

PEGREFFI, G. (1955). Ricerche sull'azione vaccinante di *Br. melitensis* devitalizzate mediante antibiotici nelle cavie. [Immunization of g. pigs with *Br. melitensis* inactivated by antibiotics.]—*Vet. ital.* **6**, 107-111. English, French and German summaries.] 2710

P. concluded that two s/c inoculations, or even one, of *Br. melitensis* emulsion devitalized by antibiotics protected g. pigs against experimental infection which caused death in controls in 16-22 hours.—T. E. GATT RUTTER.

Anon. (1954). A standardized antigen and agglutination technic for human brucellosis. Report No. 3 of the National Research Council Committee on public health aspects of brucellosis.—*Amer. J. clin. Path.* **24**, 496-498. 2711

The antigen recommended for use in the tube agglutination test for brucella infection in human beings is Strain No. 1119, prepared by the Bureau of Animal Industry for veterinary use. The tubes are incubated for 48 hours at 37°C. Details of the procedure were given, with a note on interpretation.

—W. S. MARSHALL.

CAPORALE, J. (1955). Les leptospiroses du bétail, en Italie. [Leptospirosis of domestic animals in Italy.]—*Bull. Off. int. Epiz.* **43**, 159-165. 2712

C. discussed the epidemiology of animal leptospirosis in Italy. He stated that the disease was commonest in pigs and horses in the North especially in the Po valley in the damp areas under intensive rice cultivation. The incidence was highest in large piggeries adjoining dairies and cheese factories where infection was spread by small rodents. Infection was widespread among horses and cases of periodic ophthalmia and other conditions have been attributed to *L. icterohaemorrhagiae* and *L. pomona*.

—T. E. GATT RUTTER.

HADLOW, W. J. & STOENNER, H. G. (1955). Histopathological findings in cows naturally infected with *Leptospira pomona*.—*Amer. J. vet. Res.* **16**, 45-56. [Authors' summary modified.] 2713

The histopathological findings in several organs of 15 Hereford cows from a herd spontaneously infected with *L. pomona* are described. The most prominent finding in the kidneys was a widespread chronic focal interstitial nephritis. Renal tubular cell proliferation was

a common finding. Where the latter change was associated with focal defects in the tubular basement membrane or with its almost complete dissolution, the proliferating tubular cells formed bizarre syncytia and giant cells in the larger areas of interstitial exudate. Haemosiderosis was the most constant finding in the spleen. Variable, but never marked, portal and interlobular mononuclear cell infiltration was the most conspicuous lesion in the liver. No significant changes were found in the uterus and lungs. *Leptospira* were demonstrated in sections of kidney from only 6 of the 15 cows. The authors discussed these findings in relation to the histology of lesions in cattle, studied during the late stages of leptospiral infection, reported by other authors.

RYLEY, J. W. & SIMMONS, G. C. (1954). *Leptospira pomona* as a cause of abortion and neonatal mortality in swine.—*Qd. J. agric. Sci.* **11**, 61-74. 2714

Four sows inoculated in the second half of pregnancy with *L. pomona*, produced 37 piglets, 34 of which were dead or died within a few minutes. In 14 of the dead piglets there was focal necrosis of the liver. *Leptospira* were isolated from 12 piglets from the infected sows.

The average gestation period in the 4 infected sows was 95 days. The sows commenced excreting the organism in the urine 17, 9, 9, and 10 days after inoculation and continued to excrete it for 5, 7, 83 and 24 days respectively.

The peritoneal fluid of piglets should be examined microscopically and, for the isolation of the organism, g. pigs should be inoculated.

—K. G. JOHNSTON.

CROOKS, J. & BLAIR, W. (1955). *L. canicola* infection treated by penicillin.—*Brit. med. J.* April 9th, 885-887. 2715

The authors described two cases of *Leptospira canicola* infection in man and expressed the view that it should be taken into consideration in the differential diagnosis of unexplained pyrexia or lymphocytic meningitis. From their observations they concluded that the incubation period is about 7 days and that high doses of penicillin in the early stages were effective.

—T. E. GATT RUTTER.

GANCARZ, B. (1954). Wartość lecznicza iperytu azotowego i penicyliny w leptospirozie psów. [Value of nitrogen mustard and penicillin in canine leptospirosis.]—*Méd. vét., Varsovie.* **10**, 23-25. 2716

Dogs infected with leptospirosis (having a positive agglutination titre to *L. canicola* and *L. icterohaemorrhagiae*) were treated by the i/v

injection of nitrogen mustard in a dosage of 0.6 mg./kg. body wt. All died within 3 days. Of a second group of somewhat younger dogs treated with penicillin, all except one recovered. In both groups treatment did not commence until the appearance of jaundice; both groups also received caffeine, saline and glucose.

Nitrogen mustard appears to have definite bacteriostatic properties against *leptospira in vitro*. *In vivo*, however, it is ineffective.

—J. R. MITCHELL.

BROWN, A. L., JENSON, J. H., CREAMER, A. A. & SCHEIDY, S. F. (1955). Evaluation of a *leptospira bacterin* prepared in culture medium.—*Vet. Med.* **50**, 167-171. [Authors' summary modified.] **2717**

Tests in cattle revealed that a single 5-ml. dose of killed *leptospira* vaccine injected s/c elicited sufficient serum antibodies to give an initial positive agglutination-lysis test at serum dilutions of 1:10 to 1:250. Although the max. antibody titre was not maintained for 6 months after vaccination, cattle were protected from artificial infection for at least 6 months and at most a year. The vaccine was completely stable when kept at 37°C. for four weeks.

QUESADA, A. (1954). La gastro-enterotoss-
iemia dei vitelli. [*Enterotoxaemia in calves.*]
Atti Soc. ital. Sci. vet. **8**, pp. 797-800. Eng-
lish and French summaries.] **2718**

An account of enterotoxaemia caused by *Clostridium welchii* Type B in a group of 10 young cattle aged 8-12 months: 4 of them died.
—R.M.

STERNE, M. & EDWARDS, J. B. (1955). Black-
leg in pigs caused by *Clostridium chauvoei*.
—*Vet. Rec.* **67**, 314-315. [Authors' summary
modified.] **2719**

Muscle specimens were examined from 4 cases of blackleg in pigs. *Cl. septicum* was the cause of disease in 2 of them, and *Cl. chauvoei* was isolated from the others in circumstances which left no doubt that it was the cause of the lesions.

LINDLEY, E. P. (1955). Preliminary obser-
vations on a flocculation test in studies on
blackleg vaccine.—*Brit. vet. J.* **111**, 87-96.
[Author's summary modified.] **2720**

L. described a flocculation test which he used for the selection of blackleg-susceptible sheep. In addition to establishing susceptibility it appeared that the test gave an indication of the level of the protective antibodies in sheep and might therefore prove useful in studies of immunity to blackleg.

FONTAINE, M. & JONDET, A. (1955). Essais de quelques thérapeutiques modernes du tétanos chez le chien. [*Treatment of tetanus in the dog.*]—*Rec. Méd. vét.* **131**, 86-90. **2721**

The authors described the symptomatic treatment of tetanus in two dogs. They used a combination of hypnotics, sedatives and curarizing agents [neuromuscular sedatives].

—T. E. GATT RUTTER.

PAMUKCU, A. M. (1954). Hemorrhagic en-
cephalomyelitis due to botulism in cattle in
Turkey.—*Zbl. VetMed.* **1**, 707-722. [In
English. French, German and Spanish
summaries.] **2722**

P. described the symptoms and P.M. findings observed in botulism in 16 cattle caused by type D toxin. Unrecognized botulism in cattle has been recurring during the dry season in 2 provinces of Turkey since 1932, the source of infection being carrion of animals and also turtle shells from which the causal organism has been recently isolated. The toxin produced haemorrhages and degenerative changes in the brain and spinal cord, accompanied by a moderate degree of myelin breakdown, these lesions being of a primary nature. Whilst the lesions corresponded well with the symptoms, it appeared that other factors, including a peripheral myo-neural blocking effect of the toxin, may play a role in the pathogenesis of the severe neuro-paralytic symptoms.

—A. ACKROYD.

LAPČEVIĆ, E., KOZIĆ, L., PRIBIČEVIĆ, S. & KATIĆ, D. (1954). Botulinusna intoksikacija konja. [*Botulism in horses.*]—*Veterinaria, Sarajevo.* **3**, 69-80. [In Croat. Abst. from English summary.] **2723**

A clinical account of botulism in two large stables. A total of 45 horses showed symptoms, and 29 of them died. Infection was traced to a batch of fodder.—R.M.

KATITCH, R. V. (1954). Examen de la possibilité d'appliquer la méthode de l'hémagglutination pour déterminer *Cl. botulinum* des types C et D. [*Attempted typing of Cl. botulinum by haemagglutination.*]—*Bull. Off. int. Epiz.* **42**, May, pp. 496-506. [English summary.] **2724**

The use of haemagglutination for the typing of strains of *Clostridium botulinum* (C and D) was restricted by the fact that not all the strains produced haemagglutinins.

—T. E. GATT RUTTER.

VALLÉE, A. (1955). A propos du diagnostic de la vibriose (*Vibrio fetus*). [Diagnosis of *V. fetus* infection.]—*Rec. Méd. vét.* **131**, 91-93. **2725**

The author discussed the diagnosis of *V. fetus* infection which could be effected by isolation of the organism, by serum agglutination and by mucus agglutination. Demonstration of the organism still remained the surest method.
—T. E. GATT RUTTER.

BRYNER, J. H. & FRANK, A. H. (1955). A preliminary report on the identification of *Vibrio fetus*.—*Amer. J. vet. Res.* **16**, 76-78. [Authors' summary slightly modified.] **2726**

A total of 164 cultures of vibrio isolated from aborted foetuses, vaginal mucus of cows, and from semen and preputial washings from bulls were tested for metabolic by-products and growth characteristics in differential culture media. There appeared to be two distinct types of vibrio on the basis of the catalase test: (1) catalase-positive organisms, thought to be true *V. fetus*; (2) catalase-negative organisms which were not incriminated as causing abortion and infertility in cattle. Both types reduced nitrates to nitrites. Catalase-positive vibrio did not produce hydrogen sulphide nor grow in deep stab cultures, whereas, catalase-negative vibrio produced large quantities of H₂S and grew in deep stabs. Serological tests indicated that there was little or no relation between the catalase-negative and the catalase-positive types.

PRICE, K. E., POELMA, L. J. & FAHER, J. E. JR. (1955). Serological and physiological relationships between strains of *Vibrio fetus*.—*Amer. J. vet. Res.* **16**, 164-169. [Authors' summary slightly modified.] **2727**

Results obtained from cross-agglutination and reciprocal absorption tests, using heat-treated cell suspensions indicated that the somatic antigens of 14 bovine strains of *V. fetus* were of four different types, designated types I, II, III and IV. One ovine strain, serologically unrelated to the bovine strains, was designated type V.

Studies employed to select a strain to be used as a diagnostic antigen showed that three of the potential diagnostic antigens were highly sensitive to *V. fetus* agglutinins in cattle sera. Strain 175 was found to be the most satisfactory of these since it gave the lowest non-specific titre in normal bovine sera.

Biochemical studies revealed that all strains tested were indole negative, nitrate positive (with one exception), and failed to grow in gelatin. None of the strains produced acid in basal media containing various carbohydrates

and polyalcohols. Most were found to bring about some reduction of litmus milk. Three serologically unrelated strains were the only H₂S producers. [See also *V.B.* **24**, 16.]

RISTIC, M., SANDERS, D. A. & YOUNG, F. (1955). Experimental *Vibrio fetus* infection in male hamsters.—*Amer. J. vet. Res.* **16**, 189-192. [Authors' summary slightly modified.] **2728**

V. fetus strains of bovine, ovine, and human origin produced infection of the testicles in male hamsters following i/p inoculation. Eleven of the 18 strains were recovered from the testicles, in which gross pathological lesions were observed. *V. fetus* of human origin was serologically related to some strains of animal origin. No cross reaction was observed between the porcine strain and any of the others studied. A degree of dermal hypersensitivity was demonstrated with formalin-killed antigens, while heat-killed antigens produced essentially equal reactions in both infected and control animals.

ORTHEY, A. E. & GILMAN, H. L. (1954). The antibacterial action of penicillin, streptomycin, and sulfanilamide against heavy suspensions of *Vibrio fetus* added to semen extender.—*J. Dairy Sci.* **37**, 407-415. **2729**

Streptomycin, but not penicillin nor sulphanilamide, when added to a semen diluent which had been heavily contaminated with a suspension of *V. fetus* culture was bactericidal, especially when the contaminated diluent-antibiotic mixture was incubated for one hour and subsequently kept refrigerated. The organism was probably in its lag phase during the first hour and therefore more susceptible. The minimum bactericidal conc. of streptomycin under these conditions was 2,000 µg./ml. The addition of penicillin and sulphanilamide did not increase the efficiency of streptomycin. The conc. of organisms used was much greater than would occur under natural conditions.—F.E.W.

ORTHEY, A. E. & GILMAN, H. L. (1954). The antibacterial action of penicillin and streptomycin against *Vibrio fetus* including concentrations found in naturally infected semen.—*J. Dairy Sci.* **37**, 416-424. [Authors' summary and conclusions modified.] **2730**

Both penicillin and streptomycin had bactericidal action against *V. fetus* organisms in artificially infected semen, streptomycin being by far the more effective. A much greater concentration of organisms per ml. was required to maintain viability in the presence of streptomycin than with penicillin.

A mixture of 500 units of penicillin and 500 μ g. of streptomycin per ml. in semen diluent, killed all *V. fetus* organisms in concentrations up to 225×10^7 organisms per ml. when exposed 6 hours under the temperature conditions used in these experiments. Since this was many more organisms than were found in naturally infected semen, this combination seems capable of rendering innocuous all *V. fetus* organisms that might be present in naturally infected semen.

At no time were the authors able to recover *V. fetus* from naturally infected semen diluted with citrate-buffered egg yolk containing 500 units of penicillin, 500 μ g. of streptomycin and 0.3% sulphanilamide per ml. and handled by the common procedures employed by artificial breeding organisations.

ROLLE, M. & MUNDT, W. (1954). Untersuchungen über *Vibrio foetus* und ähnliche Mikroorganismen. [*Vibrio foetus* and similar micro-organisms.].—*Zbl. VetMed.* 1, 759-772. [English, French and Spanish summaries.] 2731

The authors compared strains of *Vibrio fetus* and *Spirillum* organisms, isolated respectively from aborted bovine fetuses and from the intestines of pigs.—A.S.

BEVERIDGE, W. I. B. (1955). Footrot in sheep. [Correspondence.].—*Aust. vet. J.* 31, 51. 2732

Attention is drawn to the difficulties of eradicating foot rot when seasonal conditions are conducive to spread of the disease. Additional hazards are the mechanical carriage to clean pasture of infected horn parings clinging to the wool of the sheep and the carriage of infection in mud adhering to boots or to feet of horses or other animals. It is emphasized that eradication is best attempted in dry seasons.

—D. F. STEWART.

HARRISS, S. T. (1955) I. Chloramphenicol (chloromycetin) and foot-rot in sheep.—*Brit. vet. J.* 111, 207-211. 2733

HARRISS, S. T. (1955). II. Terramycin and foot-rot in sheep.—*Ibid.* 212-214. [Author's summaries modified.] 2734

I. The application to affected feet of chloramphenicol, in concentration of 0.5-1% in alcoholic solution possessed no advantages over 10% copper sulphate solution used as a foot bath. In the absence of a treatment more successful than copper sulphate foot baths, the continued treatment of foot rot by this means after a month

has elapsed since the commencement of treatment resulted in few further recoveries; H. recommended that uncured sheep should be eliminated from the flock.

II. The application of an ointment containing 5 mg. of oxytetracycline (terramycin) and 10,000 units of polymyxin B sulphate per g. was found to be highly effective against the common form of foot rot in sheep. The cost was estimated at about 2½d per sheep at each application.

SAMBROOK, P. M. F. (1955). Report on the treatment of foot rot in sheep with chloramphenicol.—*Vet. Rec.* 67, 74. 2735

Thirty rams affected for six months with foot rot intractable to copper sulphate and Stockholm tar were treated with a 10% alcoholic solution of chloramphenicol. Diseased horn was removed and the tincture was brushed on. After three treatments at 6-day intervals all the affected feet appeared to be free from the infection.—J. M. LEACH.

JEZIC, J., LIKAR, I. & TALIĆ, A. (1955). La lutte simultanée contre la tuberculose et la brucellose bovines. [Simultaneous eradication of bovine TB. and brucellosis.].—*Bull. Off. int. Epiz.* 43, 331-343. 2736

The authors expressed the view that testing and other control measures for TB. and brucellosis should be carried out simultaneously. This would expedite eradication of the two diseases and effect a saving in time, energy and money.—T. E. GATT RUTTER.

ANCZYKOWSKI, F. (1954). Brucelozza drobiu.

II. Wyniki badań serologicznych z surowicą drobiu z terenu Dolnego Śląska. III. Odczyn aglutynacyjny surowicy krwi kur zakażonych jednocześnie przez *S. pullorum* i *Brucella* w warunkach naturalnych. [Brucellosis in fowls with concurrent *S. pullorum* and *Br. abortus* infection.].—*Roczn. Nauk rol.* Ser. E. 66, 303-317 & 319-325. [English and Russian summaries. Abst. from English summaries.] 2737

Sera from 25 out of 29 flocks, representing a total of 2,384 fowls, in Lower Silesia were positive to the agglutination test for *Br. abortus*. Serum from 19 out of 46 turkeys was also positive. There was no correlation between reactions to the agglutination tests for *Salmonella pullorum* and *Br. abortus* respectively.—R.M.

DUTTON, A. A. C. (1955). The influence of the route of injection on lethal infections in mice.—*Brit. J. exp. Path.* 36, 128-136. [Abst. from survey of paper: p.i.] 2738

D. inoculated mice with 10 species of pathogenic bacteria by three different routes and found that most of them were least lethal when injected i/v, a finding apparently at variance with the commonly accepted idea that localization helps to overcome infection. Two species of which the reverse was true were lethal only in very large doses, which may have overwhelmed the reticulo-endothelial system when the i/v route was used.

ENGEL, J. A. & VAN DER MAAS, J. C. (1955). Schimmelinfectie bij een runderfoetus. [**Isolation of fungi from an aborted calf foetus.**]—*Tijdschr. Diergeneesk.* 80, 404-405. [English, French and German summaries.] 2739

Absidia ramosa and *Glenospora graphii* were cultured from lesions of the skin of a 7-month aborted bovine foetus. The herd being free from brucellosis, the moulds were considered to have been the cause of the abortion.

—C. A. VAN DORSSEN.

HOLZ, K. (1955). Granulomatöse mykotische Aortenveränderung beim Huhn. [**Granulomatous mycotic lesions in the aorta of a hen.**]—*Zbl. VetMed.* 2, 284-288. [English, French and Spanish summaries. English summary modified.] 2740

H. described a solitary granuloma of mycotic nature, presumably secondary, in the aorta of a hen. The presence of an unidentified mycelium was readily demonstrated in the main mass of the lesion and with more difficulty in small granulomatous foci between the intima and media of the aorta. He discussed the possibility of confusing the lesion with *Bact. coli* granuloma and TB.

GIOLITTI, G. & MARIONI, T. (1954). Ricerche sull'azione *in vitro* di antibiotici del gruppo degli epteni su agenti patogeni di micosi animali. [**Action *in vitro* of two antibiotics isolated from *Streptomyces tanashiensis* on fungi pathogenic for animals.**]—*Atti Soc. ital. Sci. vet.* 8, pp. 618-620. [English and French summaries.] 2741

The authors prepared extracts having antibiotic properties from two strains of *Streptomyces tanashiensis*. A conc. of 0.25 µg. per ml. of either of these substances inhibited the growth of *Candida albicans* and of *Torulopsis in vitro*; 2.5 µg. per ml. was required to inhibit *Aspergillus*.—R.M.

PRIESTLEY, F. W. (1955). Immunisation against contagious bovine pleuropneumonia, with special reference to the use of a dried vaccine.—*J. comp. Path.* 65, 168-182. 2742

P. employed the "tail-tip" method of inoculation to immunize cattle against bovine contagious pleuro-pneumonia, using broth culture. The method was effective, but preparation of the vaccine was inconvenient in that re-inoculation into fresh broth had to be performed every second day, and in that the organism did not give rise to satisfactory immunity after the 15th subculture. Work was therefore done to develop a vaccine from freeze-dried organisms which have the advantage of remaining viable in storage for many years. Good results were achieved by resuspending the dried organisms in saline, and inoculating by the "tail-tip" method together with agar as an adjuvant. Without agar the vaccine was ineffective, but as agar is unsuitable for use in the field, a search for more suitable adjuvants has been started.

—A.S.

WHITE, R. W. (1955). The immunising power of penicillin-treated vaccine cultures of the causal organism of contagious bovine pleuropneumonia. —*Vet. Rec.* 67, 316-317. [Author's summary modified.] 2743

In experiments in cattle to compare the immunizing power of penicillin-treated, with that of untreated bovine contagious pleuro-pneumonia culture vaccine no difference could be detected. In the main experiment 46 cattle were inoculated with penicillin-treated vaccine and 43 of them were solidly immune to subsequent challenge. Of 45 cattle inoculated with untreated vaccine 43 were immune.

HYSLOP, N. St. G. (1955). The viability at low temperatures of a dried egg-adapted (Kenya vaccine) strain of *Asterococcus mycoides*.—*Vet. Rec.* 67, 411-412. [Author's summary modified.] 2744

A batch of the strain T.1 egg-adapted bovine contagious pleuro-pneumonia vaccine, described by Sheriff & Piercy [*V.B.* 23, 386 & 24, 4010], was re-tested after 2½ years' storage at low temp. No appreciable change had occurred in its immunizing or other properties during this period.

ALBERTSEN, B. E. (1955). Pleuropneumonia-like organisms in the semen of Danish artificial insemination bulls.—*Nord. VetMed.* 7, 169-201. [In English. German and Danish summaries.] 2745

The author isolated 2 strains of pleuropneumonia-like organisms from the semen of 76 out of 85 apparently normal bulls, using the following method: freshly collected semen was diluted 1:1 with 1% peptone solution containing thallium acetate and penicillin. On arrival

at the laboratory it was inoculated into semi-solid medium composed of ox heart infusion, peptone, yeast extract, fresh yeast, ascitic fluid, and agar. After 5 days' incubation organisms were subcultured for another 5 days before being transferred to solid medium similar to that described above, but with a higher agar content.

He compared the 2 strains isolated with other strains of p.p.l.o., including those isolated by Edward [V.B. 21, 330 & 23, 2790], and with L forms of *Streptobacillus moniliformis* and *Proteus vulgaris*. Although both strains were similar to those described by Edward as being pathogenic for cows, it was concluded that they were saprophytic, occurring in the prepuce of a high proportion of normal bulls.—R.M.

SHAMIR, A. (1954). [The influence of serial passages through embryonated chicken eggs on the virulence of *Capromyces agalaxiae*. Preliminary report.]—*Refuah vet.* 11, 196-197. [In Hebrew.] 243. [In English.] 2746

S. attenuated the organism of contagious agalactia of sheep and goats by a series of passages in chick embryos. A vaccine prepared from the 40th egg passage produced no clinical symptoms in 27 goats and 2 sheep. Vaccinated goats were immune against 10 lethal doses of a virulent culture of the organism two and a half months after vaccination.

—T. E. GATT RUTTER.

FAHEY, J. E. & CRAWLEY, J. F. (1954). Studies on chronic respiratory disease of chickens. IV. A hemagglutination inhibition diagnostic test.—*Canad. J. comp. Med.* 18, 264-272. 2747

A pleuropneumonia-like organism (PPLO) isolated from a turkey was used as antigen in the haemagglutination inhibition test described. Antibodies were present two or three weeks after infection, and reached max. titre 6-8 weeks

later. PPLO were isolated after symptoms had subsided. Recovered fowls were resistant to challenge immediately after recovery.

—THOMAS MOORE.

SMITH, P. F. (1955). Synthetic media for pleuropneumonia-like organisms.—*Proc. Soc. exp. Biol., N.Y.* 88, 628-631. 2748

S. described a synthetic medium producing almost optimal growth of some strains of pleuropneumonia-like organisms — generally considered to be a heterogeneous group with regard to their nutritional requirements. Amino-acids appeared to serve as the only energy source. Tin ions appeared to have some nutritional role in the growth of these organisms.—T. E. GATT RUTTER.

PLAZAS-MORALES, L. (1955). Ricerche batteriologiche sulla cervice normale della vacca. [Bacteriological researches on the normal cervix of the cow.]—*Zootec. e Vet.* 10, 74-75. [Abst. from English summary.] 2749

Cultures were made from the normal cervix of 20 virgin heifers, 20 pregnant cows and 60 cows in oestrus. The following organisms, in order of frequency, were isolated:—*Bact. coli* (62), non-haemolytic staphylococcus (55), *Bacillus subtilis* (43), *Bact. aerogenes* (13), haemolytic staphylococcus (11), haemolytic streptococcus (9), small rod-shaped Gram-positive organisms (8), *Paracolon* (6), *Proteus* (6), mycetes (3), *Str. faecalis* (1) and *Salmonella* (1).—T. E. GATT RUTTER.

BRIGGS, C. A. E., WILLINGALE, J. M., BRAUDE, R. & MITCHELL, K. G. (1954). The normal intestinal flora of the pig. I. Bacteriological methods for quantitative studies.—*Vet. Rec.* 66, 241-242. 2750

The authors carried out a comparative study of the microflora and its daily variations in faecal and in caecal material of pigs.

—T. E. GATT RUTTER.

See also abst. 2971 (animal diseases in the Caribbean); 2982 (oedema disease and vibriotic dysentery in swine); 2983 (treatment of arthritis in pigs with swine erysipelas vaccine); 3064 (microbial flora of air); 3071 (report, Animal Health Services, Gt. Britain); 3072 (report, Canada); 3073 (report, Australia); 3074 (report, Malaya); 3075 (report, Leeward Islands); 3076 (report, Somaliland); 3077 (report, homing pigeons health service, Netherlands); 3078 (report, Algeria); 3079 (report, French Guiana).

DISEASES CAUSED BY PROTOZOAN PARASITES

CHARY, R., GONZALÈS, P., LAPOUGE, & PÉRON. (1954). Dysenterie amibienne chez le chien en Indochine. [Amoebic dysentery in dogs in Indochina.]—*Rev. Cps vét. Armée.* 1, 26-29. 2751

A general account of canine amoebic dysentery which is of frequent occurrence in Indochina. Vegetative forms of the causal

organism are of variable size, but the cysts differ from those of *Entamoeba histolytica* in their slightly smaller size. The possibility of transmission between man and dog is discussed. The condition may be acute or chronic and is frequently associated with ancylostomiasis and secondary bacterial infections. Bis-(*p*-arsonophenylamino) 1,2 ethane shows promise as a curative drug.—M. L. CLARKE.

PEEL, E. & CHARDOME, M. (1954). Infections multiples à trypanosomes transmises aux mammifères par *Glossina brevipalpis* du Mosso (Urundi). [Multiple infection of animals with trypanosomes by *Glossina brevipalpis*.]—*Ann. Soc. belge Méd. trop.* **34**, 361-366. [In French. Flemish summary.] 2752

Daily examination of blood films from two pigs infected by the bite of *Glossina brevipalpis*, captured in the field revealed, in one case, the presence of 5 trypanosomes, *T. suis*, *T. congolense* var. *urundiense*, *T. congolense* var. *berghei*, *T. congolense* var. *mossoense* and *T. simiae*, and in the other, the first four species.

—M. L. CLARKE.

LUCAS, J. M. S. (1955). Transmission of *Trypanosoma congolense* in cattle under field conditions in the absence of tsetse flies.—*Vet. Rec.* **67**, 403-407. [Author's summary modified.] 2753

Sixteen healthy cattle and 4 infected with *T. congolense* were herded together under field conditions in an area free from tsetse flies. In 211 days 5 out of 16 healthy in-contact cattle became infected. In a similar experiment at the same site, using a different strain of *T. congolense*, 2 out of 12 in-contact cattle became infected in 61 days.

MILNE, A. H., ROBSON, J. & LWEBANDIZA, T. (1955). The efficacy of Berenil against *T. congolense* in Zebu cattle.—*Vet. Rec.* **67**, 280-281. 2754

The authors tested "berenil" [a diguanyldiazoamino-benzine derivative] on zebu cattle experimentally infected with *T. congolense*. The dosage used was 2 mg./kg. at which level no toxic symptoms were noticed. Trypanosomes were absent from the peripheral blood of treated animals for 150 days. The drug did not appear to protect cattle re-infected after this period.—T. E. GATT RUTTER.

MILNE, A. H. & ROBSON, J. (1955). The late treatment of *Trypanosoma congolense* infection in Zebu cattle with ethidium bromide.—*Vet. Rec.* **67**, 452-453. [Authors' summary copied verbatim.] 2755

Taking as the criterion of cure the absence of trypanosomes from the peripheral circulation for 125 days as determined by thrice weekly examination of thick blood smears, ethidium bromide cured Zebu cattle experimentally infected with *T. congolense* administered 53 and 61 days after infection.

The untreated control animals died from trypanosomiasis within a period of 111 days after infection.

LEACH, T. M., KARIB, A. A., FORD, E. J. H. & WILMSHURST, E. C. (1955). Studies on ethidium bromide. VI. The prophylactic properties of the drug.—*J. comp. Path.* **65**, 130-142. [Authors' summary modified.] 2756

The authors determined the effectiveness of single prophylactic injections of ethidium bromide against single massive challenge with *T. congolense* or *T. vivax*. At 1.0 mg./kg. the drug gave some protection against *T. congolense* for 4 weeks, and at 5.0 mg./kg. it gave some protection for 6 weeks. Against *T. vivax*, dosages of 1.0 mg. and 5.0 mg./kg. both gave some protection for 6 weeks. A number of transient infections occurred in many of the experimental groups of cattle and their significance was discussed.

RAY, H. N., SHORT, G. V., SHIVNANI, G. A. & HAWKINS, P. A. (1953). Therapy and prophylaxis of Indian equine and bovine trypanosomiasis by 'antrycide' formulations.—*Indian vet. J.* **29**, 469-477. 2757

"Antrycide" — quinapyramine sulphate and chloride—in dosage varying from 3-14.8 mg./kg. body wt. cured *T. evansi* infection in 116 cattle and 21 horses without toxic effects, and a content of 3 mg./kg. of the sulphate was considered to be effective and safe. Sixty-six of the cattle which had reacted to the c.f. test before treatment were negative to the test 3 months after treatment.—R. N. MOHAN.

VANDEPLASSCHE, M., FLORENT, A., PAREDIS, F. & BRONE, E. (1954). Pathogenese, diagnose en behandeling van de Trichomonas-infectie bij runderen. [Pathogenesis, diagnosis and treatment of *Trichomonas* infection in cattle.]—*C. R. Inst. Encour. Rech. sci., Brux.* Publ. No. 13. pp. 72. [In Flemish. English, French and German summaries.] 2758

This is a general account of research on *Trichomonas foetus* infection in cattle carried out in Belgium over the past four years, the purpose of which was to investigate the pathogenesis and epidemiology of the infection under conditions of natural service and artificial insemination. The initial conception rate of non-immune heifers after natural service by an infected bull was as high as 45%: it was concluded that although trichomonads were present in the vagina after service, spread of the infection into the uterus did not take place at once.

Best results for the treatment of infected bulls were obtained by rubbing the penis and prepuce, under light epidural anaesthesia, for 10 min. with swabs soaked in 0.1% trypaflavine

soln. (diaminomethylacridine chloride) at 40° C., followed by the rubbing in of "bovoflavin" ointment (ointment containing a urea-quinoline compound in an acridine base) for a further 10 min. Using this method 76 out of 85 bulls were cured by a single treatment. The authors did not advise the treatment of infected cows.

—C. A. VAN DORSSEN.

VANDEPLASSCHE, M., FLORENT, A., OOSTERLINCK, M., PAREDIS, F., VEREERTBRUGGHEN, W. & BRONE, E. (1953). Pathogénie, diagnostic et traitement de la trichomoniasé chez les bovins. [Pathogenesis, diagnosis and treatment of trichomoniasis in cattle.]—*Rec. Méd. vét.* 129, 777-801. 2759

A general account, with reference to the literature and investigations carried out in Belgium. [See preceding abst.]—R.M.

MARCHISIO, M. & MOLINARI, G. (1955). Ricerca del *Trichomonas genitalis bovis* nel materiale spermatico integro, in quello diluito e conservato, nel liquido preiaculatorio e nella vagina artificiale. [*Trichomonas foetus* in diluted and undiluted semen, in prostatic secretion and in the artificial vagina.]—*Vet. ital.* 6, 507-515. [English, French and German summaries]. 2760

Good conception rates to artificial insemination have been reported from the use in America of infected bulls.

Two infected Piedmont bulls were used, and samples of raw semen and also of semen diluted 1:10 and stored 30 hours at 5°C. were cultured, using the medium described by Plastridge, as also were washings from the lining of the artificial vagina, preputial washings, and samples of pre-ejaculatory fluid. All yielded trichomonads, the density being lowest in diluted semen. The authors concluded that the use of infected bulls for artificial insemination should not be recommended.

—F. L. M. DAWSON.

MCENTEGART, M. G. (1954). The maintenance of stock strains of trichomonads by freezing.—*J. Hyg., Camb.* 52, 545-550. 2761

The ability of 4 species of trichomonads to withstand freezing was investigated. They were suspended in medium containing glycerol. The most satisfactory conditions were storage at -79°C. after slow freezing. *Tr. gallinae* survived without glycerol for 6 months; *Tr. vaginalis* was viable for 4 months with glycerol and *Tr. hominis* for 6 months, but *Tr. foetus* failed to withstand freezing.

—JAS. G. O'SULLIVAN.

FLORENT, A. (1954). *Trichomonas foetus* perd-il, in vitro, l'antigène qu'il a en commun avec *Vibrio foetus*? [Does *Trichomonas foetus* lose, in vitro, the antigen which it shares with *Vibrio foetus*?]—*C. R. Soc. Biol., Paris.* 148, 1301-1302. 2762

F found that most mucus samples which agglutinated *Tr. foetus* also agglutinated *V. foetus*: he postulated the presence of a common antigen for these two organisms. Mucus from a heifer with a pure *Tr. foetus* infection, agglutinated *Tr. foetus* at a dilution of 1:160 and *V. foetus* at 1:320. After absorption of the mucus by the addition of *Tr. foetus* for 6 consecutive times, the mucus no longer agglutinated that organism, but agglutinated *V. foetus* at 1:80. Only 3 consecutive adsorptions of the mucus by *V. foetus* were required to abolish agglutination to that organism: the mucus still agglutinated *Tr. foetus*, at 1:160 dilution. This effect was not reciprocal, for mucus which agglutinated *V. foetus* at 1:10,000 dilution had no action on a suspension of *Tr. foetus*.

Anti-*Tr. foetus* serum obtained by infecting rabbits remained devoid of power to agglutinate *V. foetus*. F. concluded that *Tr. foetus* rapidly lost in vitro the antigen fraction which it has in common with *V. foetus*.—JAS. G. O' SULLIVAN.

JOYNER, L. P. & KENDALL, S. B. (1955). The use of 2-amino-5-nitrothiazole in the control of histomoniasis. — *Vet. Rec.* 67, 180-183. 2763

The authors compared continuous and discontinuous treatments with aminonitrothiazole on turkeys artificially infected with *H. meleagridis*. A continuous treatment for a given number of days was more effective than treatment for the same number of days separated by intervals. They found that a 14-day treatment with the drug at 0.1% in the food gave complete suppression provided that it was begun at or before the time of infection. If this treatment was started more than 24 hours after infection, however, relapses frequently followed the termination of treatment. At lesser concentrations the drug suppressed clinical symptoms during treatment, but relapses occurred after the end of treatment irrespective of when treatment began.—A.S.

MARIA LEI, G. (1955). I sulfamidici nella terapia della coccidiosi dei bovini (da *Eimeria zurni*). [Treatment of coccidiosis in cattle with sulphonamides.]—*Vet. ital.* 6, Suppl. to No. 2. 278-283. [English, French and German summaries.] 2764

The 12 cattle involved in these experiments

were affected with advanced coccidiosis (*E. zürni*). Six were given sulphaguanidine and six sulphamerazine, by mouth. The author reported an immediate, clear-cut and lasting improvement in condition and return to normal health as a result of the treatment. Blood counts on the sick animals revealed a marked basophilocytosis (average 14.16%, range 10–18%.—I. W. JENNINGS.

TARLATZIS, C., PANETSOS, A. & DRAGONAS, P. (1955). **Furacin in the treatment of ovine and caprine coccidiosis.**—*J. Amer. vet. med. Ass.* **126**, 391–392. [Authors' summary and conclusions modified.] **2765**

Nitrofurazone (furacin) was a highly effective anti-coccidial agent in lambs and kids when given by mouth at a dosage of 7–10 mg. per kg. body wt. daily for 7 days. A dose of 10 mg. per kg. produced better results than the lower dosage in that no mortality occurred among treated animals. It was more effective and less expensive than sulphaguanidine.

BATTELLI, C. & GUARNA, L. (1955). Segnalazione della piroplasmosi bovina da *Babesiella berbera*. [**Piroplasmosis in cattle in Italy.**]—*Vet. ital.* **6**, Suppl. to No. 2. 268–273. [English, French and German summaries.] **2766**

A group of 85 cattle was imported into Italy from Switzerland. Sixteen days later an epidemic of piroplasmosis broke out affecting 63 of them. The symptoms and lesions were classical, but 3 animals manifested the rather rare nervous symptoms. There were 16 deaths and 9 cases of abortion. The infecting organism was *Babesia berbera* and the ticks found on the animals were *Rhipicephalus bursa* and *R. sanguineus*.—I. W. JENNINGS.

REUSSE, U. (1954). Zur Klinik und Pathologie der Hunde-Babesiose. [**Symptoms and pathology of Babesia infection in dogs.**]—*Z. Tropenmed. u. Parasit.* **5**, 451–469. [Abst. from English abst.] **2767**

Some clinical and histopathological aspects of piroplasmosis were studied in more than 100 dogs experimentally infected with *B. canis*. R. could not confirm either a pre-erythrocytic phase of the parasite or schizogony stages during the prepatent period within the endothelial cells of various organs as described by Carini, nor the negative blood phase observed by Paraense. Jaundice was seen only once during the clinical course and was considered to be non-specific in origin.

In 21 dogs which died from the infection the histopathological findings were uniform or

varied only in degree. The brain generally showed ischaemic and homogenizing lesions of the ganglionic cells surrounded, sometimes, by an accumulation of glia cells. True neuronophagia was found very rarely. In the white substance, glia cells showed diffuse or circumscribed proliferation, also perivascular clusters of glia cells were occasionally observed.

Three dogs had cerebral symptoms indicating acute ataxia. P.M. examination revealed proliferation of glia cells and capillaries, perivascular infiltration, blood extravasation, and damage of the Purkinje cells by ischaemia. A spongy state of the tissue with incipient degeneration of the medullated sheaths was found in one case.

R. discussed the pathogenesis; he pointed out that histopathological changes of the brain substance developed rarely and only in the final stages of the infection.

BOERO, J. J. (1954). Existe una esquizogonia periférica en las infecciones por *Babesia argentina* y *Babesia bigemina*? [**Does schizogony take place in the peripheral blood in Babesia infections?**]—*Rev. Med. vet., B. Aires.* **36**, 1–5. **2768**

B. criticized the theory that, following an infective tick bite or artificial inoculation, multiplication of *B. argentina* or *B. bigemina* takes place in the red blood cells. He argued that if this were the case the organisms would be present in the blood in increasing numbers from the moment of infection. In his experience however they were not present in the blood before the clinical stage of infection, when they suddenly appeared in large numbers. From this he concluded that the multiplication must take place in the fixed tissues, and that the onset of clinical disease occurred when merozoites were released into the blood to attack the r.b.c.

In discussing multiplication in the fixed tissues he commented that under particular circumstances, as for instance when an animal was weakened by rinderpest, latent infection could become activated, and under such circumstances schizonts were released into the blood. He stated that he had also seen schizonts in smears from normal infections, but that they were rare under normal conditions.

—I. W. JENNINGS.

MOLS, A. & SZABUNIEWICZ, M. (1955). Stérilité d'un taureau consécutive à l'anaplasmose. [**Sterility in a bull as a result of anaplasmosis.**]—*Bull. agric. Congo belge.* **46**, 345–350. [Flemish summary.] **2769**

Spermatozoa were almost completely absent from the semen of a bull which had recovered from *Anaplasma* infection 3 months previously. Since there was no improvement a year later, the bull was slaughtered. Histological examination of the testicles yielded evidence of acute haematogenous orchitis, followed by vascular thrombosis and degeneration of the germinal epithelium.—R.M.

LIEBERMAN, L. (1955). **Intestinal toxoplasmosis in a cat.**—*N. Amer. Vet.* **36**, 43-45. 2770

See also absts. 2971 (animal diseases in the Caribbean); 3075 (report, Leeward Islands); 3077 (report, Netherlands health service for homing pigeons); 3079 (report, French Guiana).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

CORSICO, G. (1954). Contributo alla conoscenza della glossite sierosa in corso de infezione aftosa spontanea nel bovino. [**Acute serous glossitis in cattle spontaneously infected with foot and mouth disease.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 505-508. Discussion: p. 508. [English and French summaries.] 2772

Acute serous glossitis has been reported in some cattle inoculated intralingually with F. & M. disease virus for the production of vaccine [V.B. **23**, 3055]. C. described the occurrence of this condition in naturally infected cattle. Swelling of the tongue was often so extensive as to cause asphyxia. The macroscopic and histological appearance of affected tongues was similar to that observed in artificially infected cattle.—R.M.

MESCHINI, S. & FORTUZZI, R. (1955). Emorragie da virus aftoso nei muscoli, nei reni e nei linfonodi di un bovino. [**Haemorrhage in the muscles, kidneys and lymph nodes in cattle caused by foot and mouth disease virus.**]—*Vet. ital.* **6**, Suppl. to No. 2. 227-238. [English, French and German summaries.] 2773

A calf, in good condition, slaughtered at the abattoir, was found to have haemorrhages varying in size from several millimetres to several centimetres in the pillars of the diaphragm, the internal muscles of the abdomen, neck muscles, psoas muscles and the anterior extensor of the left metacarpus. All other muscle groups were normal. Punctiform haemorrhages were found in the kidneys, epicardium and pleura. The mediastinal, bronchial, hypogastric and renal lymph nodes were very haemorrhagic. After elimination of bacterial and traumatic causes, animal inocula-

A report of a case in which there was considerable enlargement of the small intestine resulting mainly from inflammation of the muscular layer.—JAS. G. O'SULLIVAN.

JACOBS, L. & MELTON, M. L. (1954). **Modifications in virulence of a strain of *Toxoplasma gondii* by passage in various hosts.**—*Amer. J. trop. Med. Hyg.* **3**, 447-457. 2771

An account of studies with an avirulent strain of *T. gondii*; differences in virulence developed following passage of the strain in various hosts.—D. POYNTER.

tion tests were made with a piece of psoas muscle, which was found to contain F. & M. disease virus type O.—I. W. JENNINGS.

VOINOV, S. I. (1955). [**Carriers in foot and mouth disease.**]—*Veterinariya, Moscow.* **32**, No. 1, pp. 25-28. [In Russian.] 2774

From experimental results and from observations in the field, the author concludes that no carrier state after F. & M. disease exists. The virus was found in the blood of infected animals up to 4 days after infection, never later; in the urine only 15 hours after the beginning of clinical symptoms. Numerous convalescents, 4 weeks after their illness, were kept in close contact with healthy susceptible animals, without the occurrence of a new case.

—A. MAYR-HARTING.

AKULOV, A. V. (1955). [**Pathological changes in rabbits experimentally infected with foot and mouth disease.**]—*Veterinariya, Moscow.* **32**, No. 1, pp. 20-24. [In Russian.] 2775

Rabbits from a few days to two months old could be experimentally infected with F. & M. disease virus. The predominant pathological feature of the infection was a degenerative necrosis of the striated muscles, particularly of the tongue, cheeks, the shoulder and the pelvic girdle. No lesions of the mouth were found in very young rabbits; but in animals, 2 months old, erosions of the tongue were observed. The younger the animal, the more rapidly did the lesions develop.—A. MAYR-HARTING.

GIRARD, H., MACKOWIAK, C., CAMAND, R., JOUBERT, L. & GORET, P. (1954). Des divers types de virus aphteux souches pures et "mutations". [**Strains and mutants of the foot and mouth disease virus.**]—*Bull. Acad. vét. Fr.* **27**, 117-124. 2776

The authors describe observations and experimental work confirming the existence of mixed or "contaminated" strains, unidentifiable serologically, and designated Ao and Ca. This work includes complete identification of "contaminated" strains, vaccine production with strains suspected of being contaminated, and purification of "contaminated" strains.

—G. V. LAUGIER.

KOMAROV, A. (1954). [Propagation of foot and mouth disease virus in the Syrian hamster.]—*Refuah vet.* 11, 198. [In Hebrew. Abst. from English summary: p. 241.] 2777

K. observed that the Syrian hamster was as highly susceptible to F. & M. disease virus as the unweaned white mouse and the yield of infected tissue was 4 times as much at 7 days and about 12 times at 22 days—with a very high titre. He considered that the possible use of the hamster for F. & M. disease vaccine production should be investigated further.

—T. E. GATT RUTTER.

RATNER, L. S., GRIBANOV, V. N., SOKOLOVA, E. A. & BOBUIR', A. Y. (1955). [A lapinized foot and mouth disease virus vaccine.]—*Veterinariya, Moscow.* 32, No. 1, pp. 18-20. [In Russian.] 2778

In rabbits under 45 days old, F. & M. disease could be produced regularly by subcutaneous injection of infective blood. The clinical picture of the disease was that of a paralysis of the body, quite unlike the disease in cattle and pigs. After 30-40 rabbit passages the virus still produced the typical clinical picture in cattle. Vaccination of cattle and pigs with the lapinized virus revealed its protective value. [No mention is made of any methods used in the preparation and preservation of the vaccine, and no measure to attenuate the virus seems to have been taken, although the virus is stated to be still fully virulent for cattle after numerous rabbit passages.]

—A. MAYR-HARTING.

PYL, G. & MÖHLMANN, H. (1954). Über Maul- und - Klauenseuche- Konzentrat-Vakzinen. II. [Concentrated foot and mouth disease vaccines. II.]—*Arch. exp. VetMed.* 8, 442-450. 2779

Further to experiments with a concentrated F. & M. disease vaccine prepared from purified antigen [*V.B.* 24, 3789] the authors reported on a concentrated vaccine, which consisted of unfiltered virus extracts, sterilized with chloroform and subsequently mixed with aluminium hydroxide. With this vaccine full immunity

was produced in cattle within 3 days of vaccination. In some instances a dose as low as 0.6 ml. was sufficient to produce immunity. Details are given of the preparation of 100 l. of a 6% vaccine, which is about the equivalent of 1000 l. of conventional vaccine. A dose of 3 ml. was stated to contain about 180 mg. of antigen.

—E.G.

FERRIS, D. H., HANSON, R. P., DICKE, R. J. & ROBERTS, R. H. (1955). **Experimental transmission of vesicular stomatitis virus by diptera.** — *J. infect. Dis.* 96, 184-192. [Authors' summary slightly modified.] 2780

A method of studying insect transmission of virus was developed, in which embryonating eggs were utilized as both the infective and susceptible hosts. This method was applied in some 700 trials to 28 species of biting diptera indigenous to Wisconsin. The following species were able to transmit the virus of vesicular stomatitis under experimental conditions for 1 to 3 days: *Stomoxys calcitrans*, *Tabanus lasiophthalmus*, *T. trispilus*, *T. lineola* var. *scutellaris*, *T. epistates*, *T. affinis*, *T. trepidus*, *Chrysops montana*, *C. striata*, *C. vittata*, *Aedes stricticus*, *A. stimulans*, *A. cinereus*, and *Culex tarsalis*. Transfer of vesicular stomatitis virus by diptera appeared to be mechanical. Evidence of this lay in the number of species found to carry the virus, the failure to discover an extrinsic incubation period, and the rapid loss of ability to transmit the virus.

BOULANGER, P. (1955). **Complement-fixation tests of swine serum. I. In the diagnosis of vesicular stomatitis.**—*Canad. J. comp. Med.* 19, 37-47. 2781

In this method, the pH of the serum is reduced to 4.4. After 18 hours at 9°C. the serum is neutralized and inactivated at 56°C. for 30 min. Such treated sera can then be tested by the usual direct c.f. techniques. This method has been applied in the titration of antibodies in sera from pigs convalescent from vesicular stomatitis.—R. GWATKIN.

ANON. (1954). **Report of the Committee on Vesicular Diseases.** [U.S.A.]—*Proc. 57th Ann. Meet. U.S. live Stk sanit. Ass.* 1953, pp. 361-365. 2782

The report dealt with vesicular diseases—F. & M. disease, vesicular stomatitis, and vesicular exanthema of pigs—and stressed the importance of early, accurate differential diagnosis. The incidence of F. & M. disease in Europe during 1949-53 and policies of control were reviewed and a brief reference was made to recent developments in research.—T. E. GATT RUTTER.

HUSSEL, L. (1955). Die Bekämpfung der Tollwut. [Control of rabies in Germany.]—*Mh. VetMed.* **10**, 131-136. 2783

Although wild animals are an important source of rabies in East Germany, H. stated that it would be unwise to limit control of the disease to the extermination of foxes, badgers and other potential carriers. He pointed out that dogs and cats naturally constitute the main danger to man. Should the incidence of rabies in Germany increase further, compulsory vaccination of dogs, as practised in Poland, Hungary and Bulgaria, would have to be considered.—E.G.

LÔBO, B. A. & DE GÓES, P. (1952-53). Presença de glicoproteínas reveladas por técnica histoquímica em corpúsculos de Negri de bovinos. [Presence of glycoproteins in Negri bodies in bovines detected by histochemical methods.]—*Ann. Microbiol., Rio de J.* **2**, 43-48. [English summary. Abst. from abst. in *Trop. Dis. Bull.* **52**, 38-39. (1955).] 2784

The authors examined the glycoprotein content of Negri bodies in nervous tissue from rabid cattle, using the technique described by McManus. There were small Negri bodies containing no glycoprotein, others with a homogeneous structure composed exclusively of glycoprotein, and others with a central part composed of glycoprotein and an outer zone of other material. In general cells containing large Negri bodies rich in glycoprotein exhibited no Golgi apparatus.—A.S.

REAGAN, R. L., TROMBA, F. & BRUECKNER, A. L. (1955). Study of haemocytes from ticks (*Ornithodoros*) infected by feeding on cave bats (*Myotis lucifugus*) infected with a street virus rabies strain.—*Stwest. Vet.* **8**, 139-142. 2785

The authors allowed ticks to feed from rabies-infected bats, and then kept the engorged ticks at 37.5°C. for a week. The blood from the ticks was then pooled and examined by the electron microscope. Virus particles were visible within the blood cells, and at their surface.—A.S.

ERCEGOVAC, D. T. (1955). [Experimental vaccination against rabies, before and after infection.]—*Acta Vet., Belgrade.* **5**, 3-11. [In Serbian. Abst. from German summary.] 2786

E. vaccinated rabbits before and after infection with rabies, using a dead vaccine pre-

pared by the method described by Hempt. The vaccine was effective when used with uninfected animals, but useless after infection. He discussed the vaccination of dogs and cats.—A.S.

GISPEN, R. (1955). Analysis of pox-virus antigens by means of double diffusion. A method for direct serological differentiation of cowpox.—*J. Immunol.* **74**, 134-141. 2787

G. described a tube technique for analysing antigens by diffusion, based on the fact that the diffusion of an antigen into a gel may result in one or more zones of precipitation. The diffusion pattern of vaccinia antigen against standard vaccinia serum was composed of 3-6 zones or fractions, with two major zones which G. labelled I and III. When cow pox antigen was tested against vaccinia serum, zone III was present but zone I was absent. On the basis of this finding, he was able to distinguish vaccinia from cow pox antigens. He also studied the diffusion patterns of ectromelia, rabbit pox, and fowl pox.—R.M.

BAUER, D. J. (1955). The antiviral and synergic actions of isatin thiosemicarbazone and certain phenoxypyrimidines in vaccinia infection in mice.—*Brit. J. exp. Path.* **36**, 105-114. 2788

B. studied the action of certain drugs in vaccinia infection in mice. Isatin thiosemicarbazone conferred 99.9% protection; thiouracil (5-(2':4' dichloro-phenoxy) conferred a much lower protection. Isatin thiosemicarbazone exerted a synergistic action with thiouracil and with some other phenoxypyrimidines also. Mice surviving infection after treatment with isatin thiosemicarbazone were immune to re-infection. There was multiplication of virus in the brains of treated mice, but it did not reach the same titre as in untreated mice nor did it reach the level at which symptoms usually occur.—T. E. GATT RUTTER.

ORLANDELLA, V. (1954). Ricerche comparative sul valore di alcune tecniche per la purificazione dell'infravirus del diftero-vaiolo aviare. [Purification of the virus of fowl pox.]—*Nuova Vet.* **30**, 81-85. 2789

Having tried the various recommended methods for obtaining a bacteria-free suspension of virus, the author concluded that the use of antibiotics provides the surest method. To the infective material he adds penicillin alone (5,000 units per ml.) or a mixture of penicillin and dihydrostreptomycin (10 mg. per ml.).

—I. W. JENNINGS.

FAZEKAS DE ST. GROTH, S. & GRAHAM, D. M. (1955). **The production of incomplete virus particles among influenza strains: chemical induction of the von Magnus phenomenon.**—*Brit. J. exp. Path.* **36**, 205-213. [Abst. from survey of paper: p. ii.] **2790**

The authors suggest that the production of incomplete influenza virus may depend on the inclusion within the cell, during viropepsis in the first cycle, of an amount of cell membrane smaller than is required for the formation of infective virus. Experiments in support of this new concept include the demonstration that chick allantoic cells could be modified by meta-periodate, so that even small inocula of a strain normally producing mainly infective virus from a large dose yielded incomplete virus.

BELYAVIN, G. (1955). **The direct flocculation of influenza virus.**—*Lancet*. **268**, 698-701. **2791**

B. described a quantitative influenza-virus flocculation-test technique using immune rabbit sera. He discussed the significance of the results of experiments from which he concluded that the test is serologically specific and is inhibited by factors present in normal allantoic fluid.

—T. E. GATT RUTTER.

HOLDEN, P. (1955). **Recovery of Western equine encephalomyelitis virus from naturally infected English sparrows of New Jersey, 1953.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 490-492. [Author's summary modified.] **2792**

The author reported the isolation of Western equine encephalomyelitis virus from the whole blood of an apparently normal immature English sparrow trapped in New Jersey, and from the pooled serum of 2 other immature sparrows.

Antibodies to the virus were found in 12 of 88 plasma specimens obtained from domestic fowls in the same area.

SHINEFIELD, H. R., LENNETTE, E. H. & LONGSHORE, W. A., Jr. (1955). **Experimental observations on a skin-test antigen for Western equine encephalomyelitis.**—*J. Immunol.* **74**, 119-187. **2793**

The authors tested the use of formal-treated infected allantoic and amniotic fluids as skin-test antigens for the detection of immunity to Western equine encephalomyelitis virus. In immunized rabbits, i/d inoculation of the antigen resulted in erythema and induration at the site of inoculation, reaching its max. at 24-36 hours. In non-immunized rabbits there was little dermal reaction, but neutralizing anti-

bodies were produced following i/d inj. of 0.1 ml. of the antigen. It was considered that the antigen might be of value in epidemiological studies in human beings, but that further work is needed.—F.E.W.

RUBIN, H., BALUDA, M. & HOTCHIN, J. E. (1955). **The maturation of Western equine encephalomyelitis virus and its release from chick embryo cells in suspension.**—*J. exp. Med.* **101**, 205-212. **2794**

The authors subjected monolayers of chick fibroblast cells to the action of a standard suspension of Western equine encephalomyelitis virus, removed all extraneous infective virus by washing, and then resuspended the infected cells. By disrupting these cell suspensions with ultrasonic vibrations at intervals after infection it was possible to free the virus and study its infectivity and rate of multiplication within the cells.

No intracellular virus was found for the first hour after adsorption, which the authors took to indicate that the infecting particle lost its infectivity on entering a susceptible cell. The first progeny virus was detectable between 1 and 2 hours after infection, and it increased exponentially during the following 3 hours.

From these and from other findings the authors concluded that, on the average, a virus particle is released from the cell within a minute after it gains the property of infectiousness.

—A.S.

VAN TONGEREN, H. A. E. (1955). **Russische zomerecephalitis een zoönose? [Is Russian spring-summer encephalitis a disease transmissible from animals to man?]**—*Tijdschr. Diergeneesk.* **80**, 433-439. [English, French and German summaries. English summary modified.] **2795**

Encephalomyelitis caused by the virus of Russian spring-summer encephalitis occurs endemically in Styria, Austria. From an epidemiological study in the area around Graz it appeared that in most human beings (60%) the cause of the disease could be traced to a tick-bite. With a number of people (18%) the consumption of unboiled goat's milk was probably the source of infection. On the basis of this observation, a milch goat was infected with the virus. Virus was present in the blood for 5 days after inoculation; between the 3rd and 8th day the virus was demonstrated in the milk, sometimes in very high concentration. The author concluded that human beings may be infected by drinking milk containing the virus of Russian spring-summer encephalitis.

MARKSON, L. M. & BLAXLAND, J. D. (1955). **Suspected infectious avian encephalomyelitis in poultry in Britain.**—*Vet. Rec.* **67**, 131. **2796**

A preliminary report of the existence in the United Kingdom of encephalomyelitis in chicks and young fowls, similar in its clinical and histological features to infectious avian encephalomyelitis ("epidemic tremor"). The main symptom was ataxia followed by paralysis of the legs. Muscular tremor, particularly noticeable in the head and neck, was seen in some cases. Lesions were present only in the brain, and consisted of non-purulent encephalomyelitis with perivascular lymphocytic infiltration and focal gliosis. The disease was transmitted by inoculating day-old chicks intracerebrally with an aqueous suspension of brain from clinically affected chicks.—R.M.

MATTHIAS, D. (1954). Der Nachweis von latent infizierten Pferden, Schafen und Rindern und deren Bedeutung als Virusreservoir bei der Bornaschen Krankheit. [**Latent infection of horses, sheep and cattle with Borna disease.**]—*Arch. exp. VetMed.* **8**, 506-511. **2797**

M. infected two foals intracerebrally with brain material from a horse with Borna disease. At P.M. examination, 71 days later, typical brain lesions were present, although during life the foals had manifested no clinical symptoms of the infection. With brain material from these foals M. produced the disease in rabbits. A third foal was infected similarly with brain material of ovine origin. Nervous symptoms became apparent 124 days after infection. The foal recovered and was killed 195 days after infection. In the brain there were perivascular infiltrations, proliferation of the glia and inclusion bodies. Attempts to transmit the infection to rabbits were unsuccessful.

A 7-month-old ram injected with equine brain material failed to develop symptoms although lesions indicative of Borna disease were present in the brain. Presence of the virus was confirmed by intracerebral inoculation of rabbits. Another sheep was also infected with equine brain material and failed to develop symptoms. P.M. there was non-purulent encephalitis and inclusion bodies were present. Rabbit inoculation failed to reveal presence of the virus.

Two calves, 8 weeks and 4 months old respectively, were injected intracerebrally with brain material of ovine origin. The younger calf developed pneumonia and was killed 40 days after infection and the other 139 days

after infection. Symptoms of Borna disease were absent, but there were lesions in the brains of both. Rabbits infected with brain material from these calves developed the disease.

M. discussed the possible role of cattle, and of latent infection generally, in the epidemiology of Borna disease—E.G.

V. SPROCKHOFF, H. (1955). Untersuchungen über das komplementbindende Antigen in Gehirnen bornavirus-infizierter Kaninchen. II. Mitteilung: Zeitliches Auftreten und Verhalten gegen höhere Temperaturen. [**Studies on complement-fixing antigen in the brain of rabbits infected with the virus of Borna disease. II. Time of appearance and resistance to heat.**]—*Zbl. VetMed.* **2**, 231-237. [English, French and Spanish summaries. English summary slightly modified.] **2798**

Complement-fixing antigen could be demonstrated two weeks after infection, (i.e. during the incubation period), in the brain of rabbits infected with the virus of Borna disease. At this time the brain suspensions were non-infective. The antigen was thermolabile (loss of titre at 60°C.). The conc. of antigen in the brain of infected rabbits varied widely and did not run parallel to the antibody titre. Brain material from rabbits infected with the virus of Borna disease and manifesting clin. symptoms invariably contained infective virus.

SCOTT, G. R. & MACLEOD, W. G. (1955). **The effect of vacuum on the titre of lapinised rinderpest virus during storage.**—*Bull. Off. int. Epiz.* **43**, 421-424. [In French pp. 417-420.] [Authors' summary modified.] **2799**

The titre of lapinized rinderpest virus was unaffected by the absence of a vacuum in ampoules stored at -20° to -30° C. for 40 days, but had deteriorated after 112 days' storage.

CABASSO, V. J., ROBERTS, G. I., DOUGLAS, J. M., ZORZI, R., STEBBINS, M. R. & COX, H. R. (1955). **Bluetongue I. Propagation of bluetongue virus of sheep in suckling hamsters.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 678-681. [Authors' summary modified.] **2800**

The authors reported the adaptation of bluetongue virus strains of different origin to the unweaned hamster. They gave details pertaining to the serial propagation of the South African Jansen strain of virus through 20 passages, together with results of its identification by the qualitative serum neutralization method. Mention is also made of the use of

infected hamster brains for the preparation of bluetongue complement-fixing antigens.

McEWEN, A. D., DOW, J. B. & ANDERSON, R. D. (1955). **Enzootic abortion in ewes: an adjuvant vaccine prepared from eggs.**—*Vet. Rec.* **67**, 393-394. [Authors' summary slightly modified.] **2801**

A suitable graded dose of ovine abortion virus inoculated into the yolk sacs of six-day-old chick embryos caused late embryonic deaths and heavy virus infections of the yolk sacs.

Formolized suspensions of yolk sacs harvested from the 12th to 15th day after inoculation were precipitated with potassium alum and the precipitate after washing was emulsified in light liquid paraffin and "falba" (a lanolin-like substance). The adjuvant vaccine thus obtained stimulated the development of virus neutralizing antibody in the sera of vaccinated sheep. The vaccine would appear to be a suitable substitute for the adjuvant vaccine formerly prepared from infected ovine foetal membrane tissues.

At least 10 doses of vaccine were obtained per egg set. Although no yolk sacs were harvested before the 12th day after inoculation, 95% of the eggs were "lamped" on only two occasions after inoculation, reducing the time and labour spent on this operation to a minimum. It is, therefore, concluded that the vaccine should be economical to prepare and use.

MATHEWS, J. & BUTHALA, D. A. (1955).

Electrophoretic determination of the immunological response of swine to hog cholera.—*Vet. Med.* **50**, 213-214 & 216. **2802**

Electrophoretic analysis of the sera of non-vaccinated, vaccinated and hyperimmunized pigs revealed changes in the γ -globulin levels between the first two and a greater response to hyperimmunization. In pools of commercial samples of sera there was a loss of part of the γ -globulin gained by hyperimmunization, a loss in albumin and failure of the α - β fractions to resolve.—T. E. GATT RUTTER.

HAMMOND, R. A. & DeTRAY, D. E. (1955).

A recent case of African swine fever in Kenya, East Africa.—*J. Amer. vet. med. Ass.* **126**, 389-391. [Authors summary copied verbatim.] **2803**

A recent outbreak of African swine fever in Kenya is described. The virus was isolated from domestic pigs and from 1 wart hog killed on the farm. Immediate quarantine, slaughter of all domestic swine, and burning the car-

casses prevented this outbreak from spreading to adjoining farms.

GIRARD, H., MACKOWIAK, C., GORET, P., JOUBERT, L. & LUCAM, F. (1953). I. Étude d'une souche Marocaine du virus de la peste porcine. (Association du virus pestique et d'un virus agent d'une pneumonie à virus du porc). [A strain of swine fever virus from Morocco. Double infection with swine fever and virus pneumonia.]—*Bull. Acad. vét. Fr.* **26**, 555-568. **2804**

GORET, P., JOUBERT, L., GIRARD, H., MACKOWIAK, C. & LUCAM, F. (1953). Essais de dépistage de la pneumonie à virus du porc en France. [Virus pneumonia of pigs in France and association with swine fever.]—*Ibid.* 569-575. **2805**

I. The authors described an investigation into a "variant" form of swine fever, which had proved resistant to standard swine fever vaccines. They found the "variant" to consist of an association of a swine fever virus with a pneumotropic virus, which they described.

II. An account of investigations on various premises where pigs had developed pulmonary lesions alone or with other lesions. In two piggeries the cause was a pneumotropic variant of swine fever: in another, where pigs had died of pneumonia, no virus was isolated, but this might have been because the technique used was not suitable. In a fourth, where lapinized virus was used, a number of pigs developed pneumonia, and later some developed normal symptoms of swine fever. The authors found that virus from the infected pigs could be passaged in rabbits, from which they concluded that it had originated from the lapinized vaccine. The virus retained its virulence for pigs after 3 passages in rabbits.—A.S.

TROPA, E. & CORREIA MADEIRA, A. (1954). Encefalomielite em leitões. [Encephalomyelitis (Teschen disease?) in piglets in Portugal.]—*Rev. Cienc. vet., Lisboa.* **49**, 369-388. [English and French summaries.] **2806**

Detailed clinical, histological and animal inoculation tests were carried out on a male and a female piglet, both one month old, affected with encephalomyelitis. By a process of elimination, the authors concluded that the disease was either Teschen disease or some other as yet unidentified encephalomyelitis virus infection.—I. W. JENNINGS.

BRAUNER, URSÍNY & ZUFFA. (1955). Tapaszlatok a bratislavai adszorbeált vakcinával a fertőző sertésbénulás elleni védőoltásokkal kapcsolatban. (Javaslat e betegség eredményes elfojtására Csehszlovákiában). [Results obtained in Czechoslovakia with a Teschen disease vaccine.]—*Mag. állator. Lapja*. 10, 86-93. [English and Russian summaries. Abst. from English summary.] 2807

In Czechoslovakia nearly 700,000 pigs of all ages were inoculated during a period of 4 months with a Teschen disease vaccine containing 10% infective brain material, 40% saline, 50% aluminium hydroxide, and 0.3% formaldehyde. Deaths attributed to vaccination amounted to 0.14% and breakdown of immunity was observed in 0.009%. Pigs vaccinated at the age of 6 weeks or over developed an immunity after 3 weeks which lasted for 7-9 months. Piglets under 4 weeks old at the time of vaccination were revaccinated after 4 weeks. The authors stated that as a result of vaccination the incidence of the disease was reduced by 80-90%.—R.M.

HECQUET, A. & DECOURT, P. (1954). Une nouvelle maladie canine épidémique. [A new infectious and highly fatal disease of dogs.]—*Rev. Path. gén. comp.* 54, 618-622. 2808

The disease described is alleged to be due to a virus affecting the central nervous system of the dog. The symptoms are distinct from those of dog distemper or other known virus infections of dogs.—W. MANSI.

SCHINDLER, R. (1955). Bericht über das Auftreten und den Verlauf einer Staupevirus-Infektion unter den Nerzen einer norddeutschen Pelztierfarm. [Distemper in mink in North Germany.]—*Tierärztl. Umsch.* 10, 118-120. 2809

S. gave an account of a distemper outbreak on a farm in Germany. As this condition is little known in Germany he described in some detail the measures taken.—A.S.

ANON. (1954). What has happened to myxomatosis?—*Pastoral Rev.* 64, 502-503. 2810

A history is given of the progress and a comparison of the spread in different seasons since the introduction of the disease into Australia in 1950. A good year for the spread of myxomatosis is one with a wet spring and a late winter. Total eradication of the rabbit population while the numbers are low is recommended.—W. S. MARSHALL.

ANON. (1955). Myxomatosis in hares.—*Vet. Rec.* 67, 455. [Copied verbatim.] 2811

It has now been confirmed that a British brown hare (sp. *Lepus Europaeus occidentalis*) killed by a dog at Wilton, Wiltshire, recently was suffering from myxomatosis. This confirms the findings in France that in rare instances the hare may be affected but it is emphasised that there is no evidence that the disease affects other animals or human beings.

On February 11th, the Ministry of Agriculture and Fisheries confirmed that the carcass of a hare found in Northern Ireland was affected with myxomatosis. The hare was a mountain hare (sp. *Lepus timidus*) also known as the blue or varying hare. This was the only other occasion on which myxomatosis had been confirmed in a hare in the United Kingdom.

ANDREWES, C. H. & HARISIJADES, S. (1955). Propagation of myxoma virus in one-day old mice.—*Brit. J. exp. Path.* 36, 18-21. 2812

The myxoma virus was propagated in a series of 30 passages in brains of new-born mice without acquiring pathogenicity for the mouse or losing it for the rabbit.

—T. E. GATT RUTTER.

GREENE, H. S. N. (1955). The response of skin from rabbits immune to the Shope virus after *in vitro* infection and transplantation to normal animals.—*Cancer Res.* 15, 124-127. [Author's summary modified.] 2813

Experiments were carried out to compare the response to re-infection with the Shope papilloma virus of skin growing *in situ* in immune rabbits with that of skin from the same rabbits transplanted to normal, non-immune animals. It was found that skin removed from immune rabbits was susceptible to infection *in vitro* immediately after removal and reacted with typical papilloma formation when transplanted to normal animals.

KILHAM, L. & FISHER, E. R. (1954). Pathogenesis of fibromas in cottontail rabbits.—*Amer. J. Hyg.* 59, 104-112. [Authors' summary modified.] 2814

The pathogenesis of fibromas in cottontail rabbits was studied by means of serial and concomitant determinations of histology, virus infectivity of lesions, and levels of serum neutralizing antibodies.

The virus titre of lesions remains high for many months in the presence of substantial titre of neutralizing antibodies.

Histological changes consist principally of gradual and steady increase in size of cyto-

plasmic inclusions in fibroma cells. Cytoplasmic inclusions and elongation of rete pegs in epidermis take place after 5 weeks.

The authors discussed relationships between pathogenesis of fibromas, transmission by arthropod vectors, and reservoirs of infection.

Although no immunological relationships were encountered evidence was presented that fibroma virus behaves in some respects similarly to the pox group of viruses.

REID, J. (1955). **Fowl pest.**—*Agriculture, Lond.* **61**, 465-470. **2815**

R. gave an up-to-date historical review of Newcastle disease since it was first described by a research worker in the Dutch East Indies and by Doyle in Newcastle-on-Tyne in 1926. He discussed the epidemiology of the disease in Great Britain and in other countries, emphasizing its economic importance to the poultry industry. He considered that the control measures adopted in Britain—viz., restrictions on movement of poultry, day-old chicks and hatching eggs and the slaughter of infected birds and contacts—were most likely to achieve complete eradication. Vaccination, he thought, was costly and had some grave disadvantages, such as short duration of immunity, and the possibility of activation of latent diseases. It would, moreover, render the haemagglutination-inhibition blood test useless as vaccinated birds would give positive reactions and the necessity for restrictions on movement would remain.—T. E. GATT RUTTER.

CLARK, D. S., JONES, E. E. & ROSS, F. K. (1955). **The use of aqueous humor for early diagnosis of Newcastle disease.**—*Amer. J. vet. Res.* **16**, 138-140. [Authors' summary modified.] **2816**

Newcastle disease virus was demonstrated in the aqueous humour of naturally and artificially infected chicks. Untreated or previously frozen aqueous humour of infected chicks agglutinated chicken r.b.c., while the non-infected material did not. The limited study indicated that aqueous humour as a source of virus for the haemagglutination test compared favourably with extract of frozen lung tissues for an early and rapid presumptive diagnosis of N.D. The haemagglutination-inhibition test, using aqueous humour was positive seven days or more after exposure. The authors suggested that a combination of the two tests should be employed for diagnostic purposes.

CARLOTTO, F. (1954). **Dosaggio della virulenza di ceppi della pseudo-peste con l'inocu-**

lazione intracerebrale nel topino. [Estimation of the virulence of strains of Newcastle disease virus by the intracerebral inoculation of mice.]—Atti Soc. ital. Sci. vet. **8, pp. 628-631. [French and German summaries.] **2817****

Using six strains of Newcastle disease virus, C. found that there was a direct relationship between the pathogenicity for fowls of a given strain and the severity of nervous symptoms in mice inoculated intracerebrally with the same strain.—R.M.

MANTOVANI, A., BRANDLY, C. A., HANSON, R. P. & MACCOLLUM, W. H. (1954). **Caratteristiche comparative tra due ceppi di virus di Newcastle di origine italiana e due ceppi di origine americana. [Comparison of the pathogenicity of two Italian and two American strains of Newcastle disease virus.]—Atti Soc. ital. Sci. vet. **8**, pp. 634-637. [English and German summaries.] **2818****

In fowls infected with one of two Italian strains of Newcastle disease virus, lesions were mainly confined to the digestive system, whereas in fowls infected with one of two American strains of the virus, lesions were mainly confined to the respiratory and nervous systems.

—R.M.

GIROTTI, V. (1954). **Spettro di emoagglutina-zione di quattro ceppi attenuati di virus della pseudo-peste: B₁-F-FR-FO. [Haemagglutination pattern of four attenuated strains of Newcastle disease virus (strains B₁, F, FR, and FO).]—Atti Soc. ital. Sci. vet. **8**, pp. 631-634. [English and German summaries.] **2819****

G. studied the agglutination of r.b.c. from fowls, pigs, cattle, sheep, and horses by two Italian strains (FR and FO) of Newcastle disease virus, one American strain (B₁) and one English strain (F). R.b.c. from 20 individuals of each species were tested separately. The Italian strains differed from the other two strains in that they did not agglutinate equine r.b.c. Strains B₁ and F agglutinated the r.b.c. of between 1-8 and 8-12 of the horses at dilutions of 1:10 and 1:40 respectively. All four strains agglutinated avian, porcine, bovine and ovine r.b.c. An additional strain, isolated in Italy, was studied, and it closely resembled the other two Italian strains. [See also V.B. 21, 734].—R.M.

PETEK, M. & GAGLIARDI, G. (1954). **Primi risultati della vaccinazione contro la pseudo-peste per via oculo-congiuntivale con un ceppo attenuato (F). [Vaccination against**

Newcastle disease by the conjunctival instillation of an attenuated strain of virus (strain F).—*Atti Soc. ital. Sci. vet.* **8**, pp. 625-628. Discussion: p. 628. [English and German summaries.] **2820**

The authors described field experiments with the attenuated strain F Newcastle disease virus described by Asplin [*V.B.* **22**, 3399], in which some 250,000 chicks aged 1-8 days were vaccinated by conjunctival instillation. They concluded that vaccinated chicks manifested no symptoms, and that chicks vaccinated when one day old were immune to N.D. two months later. Small-scale experiments on the reinforcement of immunity by the vaccination with strain F virus of fowls vaccinated two months previously with the same strain or with killed vaccine, yielded promising results.—R.M.

BINAGHI, C. & NARDELLI, L. (1955). Osservazioni sperimentali e pratiche sulla vaccinazione contro la pseudopeste dei polli col vaccino vivo attenuato "Brescia". [**Immunization against Newcastle disease using the "Brescia" living attenuated vaccine.**—*Vet. ital.* **6**, 112-120. [English, French and German summaries.] **2821**

In laboratory tests on 1,000 chickens and field vaccination trials on about 2,000,000 chickens and 60,000 young pheasants the vaccine was found to be effective and harmless.

—T. E. GATT RUTTER.

CORDIER-BOULLANGIER, G., OUNAIS, A. & HAROUNI, B. (1955). Vaccinations simultanées contre la maladie de Newcastle et la variole aviaire, par virus vivants. [**Simultaneous vaccination against Newcastle disease and fowl pox, using live viruses.**—*Rec. Méd. vét.* **131**, 341-352. **2822**

The authors found it possible to immunize fowls against Newcastle disease and fowl pox for at least a year by simultaneous vaccination using live viruses.—A.S.

PAGNINI, U. (1954). Ricerche comparative su alcuni lati negativi della immunizzazione antipseudo-pestosa aviaria fatta con virus attenuato H (Hertfordshire) o con un vaccino a virus inattivato. [**Comparison of the results of immunization against Newcastle disease with attenuated virus and with killed virus.**—*Atti Soc. ital. Sci. vet.* **8**, pp. 644-648. Discussion: pp. 648-659. [English and French summaries.] **2823**

P. described a small-scale experiment comparing the safety of killed Newcastle disease vaccine with that of strain H Newcastle disease virus when inoculated into fowls. No illness

was observed in 50 fowls inoculated with killed vaccine, but 19 out of 50 fowls inoculated with strain H virus developed N.D., and 11 of them died. He did not compare the immunity obtained by the two vaccines. In discussion on this paper, B. Ubertini severely criticized the author's findings.—R.M.

POLCI, N. & SILVAGNI, T. (1954). Eliminazione del virus di Newcastle da parte di alcuni carnivori domestici e selvatici contaminati sperimentalmente. [**Elimination of Newcastle disease virus by dogs, cats and foxes fed infected meat.**—*Atti Soc. ital. Sci. vet.* **8**, pp. 637-640. Discussion: p. 640. [English and French summaries.] **2824**

Newcastle disease virus was recovered from the urine and faeces of one out of two foxes and one out of three dogs from the 1st to the 5th day after feeding them with carcasses and viscera of fowls which had died from N.D. Virus was not recovered from the excreta of two cats similarly fed.—R.M.

WILLS, F. K. (1955). Study of an unidentified agent producing arthritis in chickens.—*Sthwet. Vet.* **8**, 146-153. **2825**

W. described a subacute or chronic disease of fowls characterized by arthritis, bursitis, tendo-vaginitis, and the presence of a purulent or caseous exudate in the synovial tissues. He proposed the name "infectious bursitis" for the condition. He produced the disease serially in chick embryos, and in fowls by inoculating organ suspensions by various routes, but could not demonstrate an organism by any routine bacteriological method. He noted haemolysis of blood agar, however and that infective suspensions, treated with antibiotics before inoculation, did not produce disease. The infective agent survived 48 hours at 4-5°C. in broth. He compared the condition with arthritis caused by pleuropneumonia-like organisms.—A.S.

REITMAN, M., ALG, R. L. MILLER, W. S. & GROSS, N. H. (1954). Potential infectious hazards of laboratory techniques. III. Viral techniques.—*J. Bact.* **68**, 549-554. **2826**

The authors discussed certain hazards to which laboratory workers are exposed through the production of aerosols or contamination of hands and environment. These included the following techniques:—the vaccine bottle method of making dilutions of virus, the intranasal and intracerebral inoculation of mice, and allantoic, yolk sac and chorio-allantoic inoculation of embryonated eggs. Harvesting of infected fluids was considered another hazardous procedure.—T. E. GATT RUTTER.

SHAMIR, A. (1954). [Isolation of rickettsia *Coxiella burneti* from raw cow's milk.]—*Refuah vet.* 11, 185-191. [In Hebrew. Abst. from English summary: p. 247.] 2827

Rickettsia burneti infection in cattle was diagnosed by means of the complement-fixation test and the organism was isolated in g. pigs and chick embryos from milk samples. First inoculation did not set up a thermal reaction in g. pigs but, on passage fever was produced. This indicated the need for a blind passage a fortnight after the first inoculation in the absence of a reaction. A suspension of g. pigs' spleen and liver containing the organism was not lethal to chick embryos when first introduced into the yolk sacs but suspensions of these yolk sacs were lethal to other embryos. The

rickettsiostatic action of streptomycin on *R. burneti* was also investigated.

—T. E. GATT RUTTER.

LUOTO, L. & MASON, D. M. (1955). An agglutination test for bovine Q fever performed on milk samples.—*J. Immunol.* 74, 222-227. 2828

An account of a capillary tube agglutination test for the detection of *Rickettsia burneti* in cow's milk. Using samples from individual cows, the test was found to be as reliable as the serum agglutination test and the complement-fixation test, but further work using pooled samples from herds in areas with a comparatively low rate of infection is desirable.

—F.E.W.

See also absts. 2911 (virus-like particles in Rous sarcoma); 2913 (possible virus nature of canine leucosis); 2914 (transplantable chicken lymphoma); 2915 (visceral lymphomatosis); 2971 (animal diseases in the Caribbean); 3071 (report, Animal Health Services, Gt. Britain); 3072 (report, Canada); 3073 (report, Australia); 3074 (report, Malaya); 3075 (report, Leeward Islands); 3076 (report, Somaliland); 3077 (report, health service for homing pigeons, Netherlands).

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BOYDEN, S. V. & ANDERSEN, M. E. (1955).

Agglutination of normal erythrocytes in mixtures of antibody and antigen, and haemolysis in the presence of complement.—*Brit. J. exp. Path.* 36, 162-170. [Authors' summary slightly modified.] 2829

Mixtures of tuberculo-protein and some rabbit antisera against the tubercle bacillus agglutinate normal sheep cells. Stronger agglutination is given by globulin fractions of antisera than by whole sera, owing to the removal in the albumin fraction of a normal serum inhibitor. If fresh g. pig serum is added to the system, haemolysis instead of haemagglutination occurs.

Evidence is presented indicating that the mechanism of this haemagglutination reaction is different from that of the Middlebrook-Dubos test, and that the antigens responsible for the two reactions are of different serological specificity.

GENGOU, O. (1954). Contribution à l'étude de l'hémolyse par l'alexine de cobaye. [Haemolysis and g. pig complement.]—*Ann. Inst. Pasteur.* 87, 241-256. 2830

Haemolysis by complement is inhibited by the presence of sodium fluoride, potassium oxalate and sodium citrate, probably because these salts prevent the fixation of g. pig complement on red cells. The chlorides of certain bivalent cations (barium, calcium, magnesium and strontium) seem to have a similar inhibitory action.—I. W. JENNINGS.

LEBRUN, J. & DELAUNAY, A. (1954). Effet exercé *in vitro* par le salicylate de Na sur deux types de réactions antigène-anticorps: l'agglutination bactérienne et l'hémagglutination passive. [Effect *in vitro* of sodium salicylate on agglutination and on haemagglutination reactions.]—*Ann. Inst. Pasteur.* 87, 387-395. 2831

Sodium salicylate has two distinct effects on antigen-antibody reactions. Firstly, it possesses a dissolving action on the antigen-antibody complex. This property is seen only in a precipitating system. Secondly, it has a denaturing action on globulin antibodies, which can be demonstrated in bacterial agglutination reactions and in passive haemagglutination.

—I. W. JENNINGS.

JENNINGS, R. K. & MALONE, F. (1955). The double diffusion precipitin technique as a tool for the study of the induction period of antibody formation.—*Brit. J. exp. Path.* 36, 1-7. [Authors' summary copied *verbatim*.] 2832

If a sample of serum withdrawn from a rabbit after parenteral administration of antigen be placed in one dépôt of a double-diffusion plate, a known solution of the antigen in a second dépôt and a known antibody solution in a third, it becomes possible to test for an excess of antigen or of antibody simultaneously with the single sample of unknown. If antigen is still present, the zone will form between the dépôt containing the serum to be analysed and that containing the known antibody. If anti-

body is in excess, the zone will form between the unknown serum and the known antigen dépôts. When the triangle plate modification of the Ouchterlony method is used the distinction may become apparent in as little as one hour. It is also possible to adjust the concentrations in the reference system to permit a rough quantitative estimate of the amount of antigen remaining in the unknown.

With the whole serum used as the antigen source, patterns were observed in which antibody excess for certain antigens could be recognised while an excess of antigen for other precipitin systems was still present. Individual variation in response to the same course of immunisation was also made apparent by this technique.

GAVOSTO, F. & FICQ, A. (1954). Étude autoradiographique de l'incorporation de la glycine- $1-^{14}\text{C}$, lors de la synthèse des anticorps. [Autoradiographic study of the formation of antibodies.]—*Ann. Inst. Pasteur*. **86**, 425-437. **2833**

Sensitized rats, injected with anti-typhoid-paratyphoid A and B and cholera vaccine in the hind paw were given injections of glycine- $1-^{14}\text{C}$, twenty-four hours before death. On P.M. examination, the local lymph nodes showed hyperplasia of undifferentiated reticular cells and basophiles. The labelled amino-acid was found in these cells, both in the nucleus and cytoplasm, but it was present in much less quantity in the lymphocytes, whatever their degree of maturity.—I. W. JENNINGS.

HIRSZFELD, L. & DUBISKI, S. (1954). I. Untersuchungen über die Struktur der inkompletten Antikörper. [Structure of incomplete antibodies.]—*Schweiz. Z. allg. Path.* **17**, 73-86. [English and French summaries.] **2834**

HIRSZFELD, L., OSIŃSKA, M. & RIESS, E. (1954). II. Über inkomplette Isoantikörper in Normalseren. [Incomplete iso-antibodies in normal serum.]—*Ibid.* 86-93. [English and French summaries.] **2835**

I. In centrifugalization at 12,000 rev. per min. firm agglutination is produced by incomplete antibodies. It is supposed that incomplete antibodies, being shorter than complete antibodies, cannot bridge the gap between erythrocytes suspended in physiological saline. Coombs antibodies are the shortest, and the precipitates form a network linking up the erythrocytes. Inhibition zones are due to differences in length of antibodies in the antiserum.

II. Examination of sera from mothers and new-born babies in physiological saline and dextran solution reveals the regular presence in normal serum of both complete and incomplete iso-antibodies. Iso-antibodies pass through the placenta most readily when both mother and foetus belong to group O, and most slowly when they belong to group A; the average titre of incomplete antibodies in foetal serum is therefore lower in the latter case than it is in the former. Incomplete antibodies are therefore not hyperimmune antibodies.—W. R. BETT.

COOMBS, R. R. A., SAISON, R. & JOYSEY, V. C. (1955). A circumstance in which the phenomenon of coagglutination could complicate the anti-globulin sensitisation test by simulating agglutination.—*Brit. J. exp. Path.* **36**, 179-185. [Authors' summary slightly modified.] **2836**

Red cells not completely washed free from their surrounding plasma may be clumped by the corresponding anti-globulin serum, itself free from agglutinins to the r.b.c. The explanation resides in Bordet and Gengou's phenomenon of coagglutination.

The authors stressed the necessity for washing r.b.c. thoroughly in the execution of the anti-globulin sensitization test. The cells of some animal species seemed more susceptible to coagglutination than those of others.

DIXON, F. J. & MAURER, D. (1955). Immunologic unresponsiveness induced by protein antigens.—*J. exp. Med.* **101**, 245-257. [Authors' summary modified.] **2837**

By repeated large infusions of heterologous plasma proteins it is possible to induce a state of specific immunological unresponsiveness in rabbits. In normal adult rabbits this lasts, in most instances, until the heterologous proteins are no longer detectable in the host (3 to 4 months). In rabbits infused from the time of birth, and perhaps also in X-irradiated rabbits, the induced immunological unresponsiveness lasted throughout the period of observation (10 to 11 months), long after disappearance of all detectable foreign proteins.

This unresponsiveness appeared to be specific for the antigens administered in excess and did not prevent antibody responses even to closely related antigens.

Unresponsiveness was not transmitted to first generation offspring.

The mechanism of this temporary unresponsiveness may, in normal adult rabbits, be dependent upon the presence of the antigen in the host. It does not, however, result from a

simple neutralization of antibody by the antigen at the moment of its formation, as has been suggested in the case of pneumococcal polysaccharide-induced immunological paralysis.

On the other hand the mechanism of the lasting immunological unresponsiveness developing in the "new-born" and perhaps in the X-irradiated rabbits may result from the acceptance of the foreign protein as essentially non-antigenic by the host. A similar situation is seen in the naturally occurring placental transfer of dissimilar red blood cell types between fraternal twins.

STONE, W. H. & IRWIN, M. R. (1954). **The J substance of cattle. I. Developmental and immunogenic studies.**—*J. Immunol.* **73**, 397-406. 2838

SØRENSEN, A. N., RENDEL, J. & STONE, W. H. (1954). **The J substance of cattle. II. A comparison of normal antibodies and antigens in sheep, cattle and man.**—*Ibid.* 407-414. [Authors' summaries modified.] 2839

1. The J substance of cattle appears to be a constituent of the serum, from which it may be acquired by the red cells so that the cells are lysed by anti-J serum. The J substance of the serum will inhibit the interaction between cells carrying J and anti-J sera. The amount of J substance present on the cells or in the serum of an individual is remarkably constant, and the cellular reactivity presumably depends on the concentration of soluble J in the serum. Cattle blood may be divided into three groups: (1) J^{es} , those with J substance on the cells and in the serum; (2) J^s , those with J substance only in the serum, and (3) j^a , those without J substance but whose sera may contain anti-J. The inheritance of these three classes may be explained by assuming a triple allelic series of causative genes — J^{es} , J^s and j^a , of descending order of dominance.

The J substance is present in the serum of the new-born calf in the same, or nearly the same, concentration that will be present in later life. It is not detectable on the red cells of the new-born calf, but is gradually taken up by the cells during the first weeks of life. Calves with the J substance in their sera which have ingested colostrum with anti-J have exhibited no untoward effects. Seemingly, the antibodies to J which are received by the calf are bound to the J substance of the serum, since anti-J cannot be detected in the serum of these calves. Other evidence suggesting strongly that the antibodies to J are bound to the J substance of the serum before combining with the red cells is indicated by the lack of adverse reaction when

transfusions are made between animals of class J^{es} and those possessing anti-J.

II. The J substance of cattle, and the R and r (formerly called O) substances of sheep, are heritable constituents primarily of the serum of individuals within each species. The presence of these substances on the erythrocytes is presumably dependent on their presence in the serum.

Cattle sera contain antibodies which are reactive with all groups of human and sheep cells. The sera of cattle with the J substance not infrequently contain antibodies with different specificities towards human cells, and within this class occasionally can be found a serum with antibodies strongly reactive with human O cells. In contrast, anti-J sera of cattle are reactive not only with J cells of cattle, but also are strongly reactive with A and AB of human beings, even more strongly reactive with sheep R cells, and considerably less strongly reactive with r cells of sheep and with human cells carrying O or B.

Four different specificities were demonstrable in anti-J sera of cattle. The absorption of antibodies in anti-J serum by J cells of cattle, R of sheep and A of human beings is clearly paralleled by the ability of cattle serum with J, sheep serum with R and saliva from human secretors of group A to inhibit the lytic reaction of anti-J with both J (cattle) and R (sheep) cells. These various results indicate that the major specificity of the antibodies in anti-J serum is directed against antigenic specificities common to cattle J, sheep R and human A. A second weaker specificity of anti-J serum appears to be directed against sheep R and human A cells but not cattle J, while additional specificities are generally present in the sera of cattle and are presumably species specific antibodies for the cells of sheep and human beings, respectively.

Despite different specificities among, and probably within, anti-J sera of cattle, anti-R of sheep, and anti-A of human beings, the evidence indicates strongly an antigenic relationship of the J substance of cattle, R of sheep and A of man. This is noteworthy because the J and R substances are primarily soluble substances of the serum of cattle and sheep, respectively, whereas the A substance of the red cells of man, as contrasted with the secretory product, is a constituent of the blood cells. The findings further support the view that some agglutinogens, perhaps all, behave serologically as if they have a complex mosaic structure so that each agglutinin is characterized by multiple antigenic factors.

HERXHEIMER, H. & WEST, T. (1955). **Sensitization of guinea-pigs by inhalation.**—*J. Physiol.* **127**, 564-571. [Authors' summary modified.] **2840**

G. pigs inhaled a highly antigenic aerosol of horse hair and dander extract for varying periods and were subjected to shock by the same method after 21 days. When the total exposure time of 18 hours was kept constant, strong sensitization was only achieved if the animals were exposed to the aerosol for 2 hours daily or on alternate days. If the interval between exposures was increased, sensitization became weaker and less certain. If the 18-hour exposure was completed on 2 or 3 consecutive days, no sensitization was achieved. When the interval between exposures was short and kept constant, the total exposure time could be decreased to 5 hours without lowering the degree of sensitization. Irritation of the respiratory passages by the inhalation of sulphur dioxide gas or of smoke from burning cotton during or before the exposure did not increase sensitivity.

WAKSMAN, B. H., PORTER, H., LEES, M. D., ADAMS, R. D. & FOLCH, J. (1954). **A study of the chemical nature of components of bovine white matter effective in producing allergic encephalomyelitis in the rabbit.**—*J. exp. Med.* **100**, 451-471. **2841**

Experimental allergic encephalomyelitis could be produced in rabbits only by the proteolipoid A and B fractions, and the ether soluble fraction of the lower phase of the chloroform-methanol extract of bovine brain white matter. Chemical analysis of the fractions and of white matter lipid preparations suggested that a small specific proteolipoid was responsible for all the observed antigenic activity. Cross reactivity between the 3 fractions was observed in skin tests.—A. ACKROYD.

NILZÉN, A. (1955). **The influence of the thyroid gland on hypersensitivity reactions in animals. II. The influence of thyroidectomy on experimental encephalitis in guinea-pigs.**—*Acta allerg., Kbh.* **8**, 57-61. [In English.] **2842**

Injections of homologous brain tissue plus adjuvant produced experimental encephalitis in normal g. pigs as well as in g. pigs which had been treated with ¹³¹I.—T. E. GATT RUTTER.

NILZÉN, A. (1955). **The influence of the thyroid gland on hypersensitivity reactions in**

animals. III. The influence of thyroidectomy on the precipitin reaction, the Arthus phenomenon and the Schultz-Dale reaction in guinea-pigs.—*Acta allerg., Kbh.* **8**, 103-111. [In English.] **2843**

In g. pigs sensitized with egg albumen after the thyroid gland had been rendered inactive by radio-active iodine, the Arthus phenomenon could not be produced; inhalation of egg albumen produced no bronchospasm, and no precipitin could be detected in their serum, but the Schultz-Dale reaction performed on the small intestine and uterine horn was positive.

—A. ACKROYD.

STETSON, C. A., Jr. (1955). **Studies on the mechanism of the Schwartzman phenomenon. Similarities between reactions to endotoxins and certain reactions of bacterial allergy.**—*J. exp. Med.* **101**, 421-436. [Author's summary modified.] **2844**

S. examined the cutaneous, ophthalmic, and systemic reactions of normal rabbits to Gram-negative bacterial endotoxins and compared them with the classical reactions of bacterial hypersensitivity. In each case he found certain similarities. The Schwartzman phenomenon can be reproduced with tuberculin in B.C.G.-vaccinated rabbits, and with suspensions or extracts of heat-killed Group A streptococci in rabbits previously sensitized to these bacteria.

These considerations suggested the hypothesis that the biological activity of endotoxins may be based on the existence in "normal" animals of delayed or tuberculin-type hypersensitivity to these materials.

STROBLE, C. P. & GLENN, M. W. (1955). **A fatal case of bovine anaphylaxis.**—*J. Amer. vet. med. Ass.* **126**, 227-228. **2845**

During an immunization programme for the production of blood typing reagents in 17 mature cows, one of the cows died following the third transfusion. P.M. examination revealed varying degrees of haemorrhage in all tissues. In a previous programme, a cow had died while receiving blood from the same donor.

—A. ACKROYD.

SCHIPPER, I. A., BOLIN, F. M. & EVELETH, D. F. (1955). **Vaccination-induced shock of anemic pigs.**—*Vet. Med.* **50**, 61-62. **2846**

In weaned pigs rendered anaemic, vaccina-

tion, with a modified live virus swine fever vaccine and simultaneous injection of swine fever antiserum, produced anaphylactic-like shock, the severity of which depended on the

degree of anaemia, but no symptoms occurred after administration of attenuated swine fever vaccine or of swine erysipelas antiserum.

—A. ACKROYD.

See also *absts.* 2650-2651 (anthrax); 2658 and 2661-2666 (T.B.); 2671 (Johne's disease); 2675 and 2676 (swine erysipelas); 2681 (pasteurellosis); 2688 (salmonellosis); 2690 (serological types of *S. pullorum*); 2696 (serotype recombination in salmonella); 2697 (antigenic activity of salmonella); 2700-2704 and 2710-2711 (brucellosis); 2717 (leptospiral bacterin); 2720 (blackleg); 2724 (typing by haemagglutination of *Cl. botulinum*); 2725-2726 (*V. fetus* infection); 2742-2744 (bovine contagious pleuropneumonia); 2747 (chronic respiratory disease); 2762 (common *T. foetus-V. fetus* antigen); 2778-2779 (*F. & M.* disease); 2781 (vesicular stomatitis); 2783-2786 ((rabies); 2787 (pox virus); 2791 (influenza virus flocculation); 2793-2794 (Western equine encephalomyelitis); 2797-2798 (Borna disease); 2799 (rinderpest); 2800 (blue-tongue); 2801 (ovine enzootic abortion); 2802-2805 (swine fever); 2807 (Teschen disease); 2815-2823 (Newcastle disease); 2827-2828 (Q fever); 2885 (Dictyocaulus); 2915 (visceral lymphomatosis); 3071 (report. Animal Health Services, Gt. Britain); 3085 (book, human blood groups).

PARASITES IN RELATION TO DISEASE [GENERAL]

DALRYMPLE-CHAMPNEYS, W. (1955). **Non-specific physiological factors controlling the phenomena of parasitism.**—*Proc. R. Soc. Med.* **48**, 13-20. 2847

A stimulating and comprehensive review concerning the dormant, symbiotic and pathogenic phases of parasitism by micro-organisms with reference to factors other than phagocytosis and specific antibodies.—E. J. L. SOULSBY.

DRUDGE, J. H., WYANT, Z. N. & ELAM, G. W. (1955). **Continuous phenothiazine therapy for horses. II. A taxonomic study following four years of treatment.**—*Amer. J. vet. Res.* **16**, 18-21. [Authors' summary modified. For Part I, see *V.B.* **24**, 499.] 2848

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

LEE, R. D. (1954). **Oviposition by the poultry bug.**—*J. econ. Ent.* **47**, 224-226. 2849

Unfertilized female *Haematosiphon inodorus* did not lay eggs. Inseminated females which were deprived of a blood meal were capable of low-grade oviposition. Inseminated females which were allowed to feed on chickens, produced an average of 4.43 eggs per day per female over a period of 7-30 days, eggs being laid on alternate days and having a viability of 53.9%.—JAS. G. O'SULLIVAN.

GREEN, A. A. & KANE, J. (1954). **The control of blowflies infecting slaughter-houses. III. Large-scale experiments at a domestic-refuse depot.**—*Ann. appl. Biol.* **41**, 165-173. 2850

An account of serious nuisance by species of *Lucilia* and *Calliphora* from a large public authority rubbish dump, and of general control measures, based on the use of D.D.T., that were employed.

After these measures had been in operation for three months birds, mainly sparrows, that fed on larvae from the dump developed illness manifested by staggering gait and irregular flight.

PARISH, W. E. (1955). **The fight against warble fly.**—*Agriculture, Lond.* **61**, 574-577. 2851

A general article in connexion with a pilot eradication experiment in progress on the Isle of Wight. Several small but important practical points have emerged. Warbles on long-haired cattle are difficult to see: they must be searched for by hand and clipped before dressing. It is essential to remove the scabs from the warbles when dressing. Wet derris preparations deteriorate rapidly, and dry derris left open to the atmosphere becomes inactive after a few months.

P. mentioned artificial insemination of female *Hypoderma* as a means of obtaining larvae for experimental purposes.

—JAS. G. O'SULLIVAN.

RABELLO, E. X. & MALHEIRO, D. de M. (1953/54). **Presença de larvas de *Oestrus ovis* L. 1761. (Diptera—Muscoidea—Oestridae) em *Capra hircus* L. 1766, no estado de São Paulo, Brasil. [*Oestrus ovis* larvae in goats in Brazil.]—*Rev. Fac. Med. vet., S. Paulo*, **5**, 41-53. [English summary.] 2852**

The authors described what they claimed to

be the first recorded occurrence in Brazil of *Oestrus ovis* larvae in the frontal and maxillary sinuses of a goat.—R.M.

HALL, L. B. (1955). **Suggested techniques, equipment, and standards for the testing of hand insecticide-spraying equipment.**—*Bull. World Hlth Org.* 12, 371-400. [In English. French summary. Author's synopsis modified.] 2853

H. outlined suggested techniques to be followed and standards to be adopted in testing the performance of compression sprayers and allied equipment, with reference to the following features: Compression-sprayer tank fatigue; tank impact; pump resistance to bursting; pump resistance to collapse; pump friction; cut-off valve durability; constant-pressure valves; cut-off valve actuation; hose flexure; hose tension and bursting-pressure; hose friction; gaskets, valve faces, and similar non-metallic parts; nozzle-orifice erosion; and nozzle pattern.

KNIFE, F. W. (1955). **Nozzles of insecticide sprayers. Comments from the point of view of malaria control.**—*Bull. World Hlth Org.* 12, 401-409. [In English. French summary. Author's synopsis copied *verbatim*.] 2854

Certain performance characteristics of the insecticide-sprayer nozzle tip and its relationship to the pressure regulator are discussed.

After analysing the effectiveness of residual spraying at various pressures, the author concludes that low-pressure application would best attain the pattern and rate of insecticide discharge laid down by the WHO Expert Committee on Insecticides.

I. & II. ADDISON, C. C. & FURMIDGE, C. G. L. (1954). **Physicochemical studies on the application of insecticides to sheep fleece. IV.—The influence of physical properties of fleece on the inactivation of cationic wetting agents. V.—The influence of carbon-chain length and halide ion of cationic wetting agents on their reaction with natural fleece.**—*J. Sci. Fd Agric.* 5, 139-145 & 212-220. 2855

I-II. The authors made a survey of samples of fleece from Blackface ewes aged 1-5 years with the object of relating the physical properties with wetting-agent inactivation. Four separate series of fleeces were used and each showed similar variations with age. It was observed that the grease content of the back was less than that of the flank and of the breast; suint tended to increase from the back

round the body, and the total grease and suint contents varied very little over the whole hoggett fleece and variations became more pronounced with increasing age.

Variations in pH were very small in all cases. Adsorption depended directly on the surface area, which decreased with age.

—JAS. G. O'SULLIVAN.

LIPSON, M. & HOPE, R. J. (1955). **Use of 'dieldrin' to protect wool against insect attack.** [Correspondence.]—*Nature, Lond.* 175, 599-600. 2856

Samples of worsted wool were treated with petroleum-ether solutions of "dieldrin" and "aldrin," after which the solvent was evaporated. A concentration of 0.05% "dieldrin" gave a moth-proof effect which persisted after treated samples had been washed for one and a half hours and dry-cleaned for one hour respectively.—JAS. G. O'SULLIVAN.

BALABEKYAN, T. P. (1954). [Tick paralysis in foals.]—*Veterinariya, Moscow.* 31, No. 5, p. 44. [In Russian.] 2857

A note on tick paralysis in 24 foals on 4 farms. Before diagnosis was made 4 of the foals died. There was massive infestation with *Ixodes ricinus* and some *Dermacentor silvarum* were also present on all the horses.

—F. A. ABBEY.

AJMERITO, G. C. (1954). Sulla terapia per via parenterale della rogna demodettica del cane. [Parenteral therapy with trypanblue in demodectic mange in dogs.]—*Atti Soc. ital. Sci. vet.* 8, pp. 695-697. [English and French summaries.] 2858

The authors claimed to have cured demodectic mange in 25 dogs by the i/v injection of 5 ml. of a 0.5% soln. trypanblue. From 5 to 12 injections were given on alternate days.

—R.M.

VINCENT, L. E., LINDGREN, D. L. & KROHNE, H. E. (1954). **Toxicity of malathion to the northern fowl mite.**—*J. econ. Ent.* 47, 943-944. 2859

Bdellonyssus sylviarum was eradicated by hand dressing infested chickens with a 4% malathion dusting powder. However, when 1lb. of the 4% malathion dust was broadcast on to each 20 sq. feet of the litter, effective control of the mite was not obtained. No taint was detected in eggs from hens which were fed 50 p.p.m. of malathion in their diet.

—D. W. JOLLY.

MADDEN, A. H., TOZLOSKI, A. H. & SWEETMAN, H. L. (1954). **Control of *Myobia musculinus* (Schrank) and *Myocoptes musculinus* (Koch) on laboratory mice.**—*J. econ. Ent.* **47**, 442-444. **2860**

Fortnightly applications of powdered

sulphur to the bodies and bedding of lab. mice gave good control of infestations of the mites, *Myobia musculinus* and *Myocoptes musculinus*. Control of the louse, *Polyplax serrata*, was obtained by the application of a 5% chlordane (a chlorinated naphthalene derivative) dust to the bedding.—D. W. JOLLY.

See also abstr. 2752-2753 (tsetse flies); 2766 (ticks found on cattle with piroplasmiasis); 2780 (diptera transmitting vesicular stomatitis); 2785 (presence of rabies virus in engorged ticks); 2868 (Phormia transmitting E. granulosus); 2899 (Dirofilaria in mosquitoes); 2971 (animal diseases in the Caribbean); 3071 (report, Animal Health Services, Gt. Britain); 3072 (report, Canada); 3073 (report, Australia); 3075 (report, Leeward Islands).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

DEIANA, S. (1954). Osservazioni sulla penetrazione delle cercarie di *Schistosoma bovis* (Sonsino, 1876) nella pelle del coniglio. [Penetration of the skin of rabbits by cercariae of *S. bovis*.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 806-807. [English and French summaries.] **2861**

Cercariae of *S. bovis* placed on the skin of rabbits reached the Malpighian layer within 12 hours and the dermis within 24 hours after exposure. The cercariae caused relatively little histological change in the skin of rabbits exposed to them for the first time.—R.M.

I. ROMAGNOLI, A. (1954). La bilirubinemia in ovini sani ed affetti da alcune parassitosi epatiche. [Bilirubinaemia in normal sheep and in sheep with echinococcus and liver-fluke infestation.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 682-685. [English and French summaries.] **2862**

II. ROMAGNOLI, A. (1954). La colesterolemia in ovini sani ed affetti da alcune parassitosi epatiche. [Cholesterol content of the blood of normal sheep and sheep with echinococcus and liver-fluke infestation.]—*Ibid.* pp. 685-689. [English and French summaries.] **2863**

I. Using a modification of the Van den Bergh reaction described by Jendrassik & Grof (1938), R. determined the bilirubin content of the blood of 23 normal sheep and 94 sheep with echinococcus, liver fluke infestation, or combined infestation with both parasites. The normal range was 0-2.48 mg. per 100 ml. blood, with an average of 1.13. Figures for infested sheep fell within the normal range, but the proportion of free bilirubin, compared with absorbed bilirubin, was much higher than normal.

II. The cholesterol content of the blood of healthy sheep ranged from 24 to 75 mg. per 100 ml., with an average of 49.8. Figures within the normal range were obtained for sheep moderately infested with echinococcus or liver fluke; 9 sheep severely affected with a combined

infestation had an increased cholesterol content of the blood, averaging 76.2 mg. per 100 ml. R.M.

SILVERMAN, P. H. & GRIFFITHS, R.B. (1955). The epizootiology of bovine cysticercosis in cattle in Great Britain.—*Trans. R. Soc. trop. Med. Hyg.* **49**, 8. **2864**

The incidence of cysticercus in cattle in 41 abattoirs ranged between 1.03 and 3.47%. This incidence is considered to represent a national figure. Epidemiological considerations include the circumstantial evidence that sewage effluents containing viable *Taenia* ova are important in spread, that helminth ova are not satisfactorily removed by rapid sand filtration and that opportunities exist at sewage works for scavenging birds to carry off untreated material.

—E. J. L. SOULSBY.

LANDI, A. & MONZINI, A. (1954). Osservazioni sul comportamento e sulla vitalità del *Cysticercus bovis* e del *Cysticercus cellulosae* alle basse temperature. [Survival times of *Cysticercus bovis* and *C. cellulosae* at low temperatures.]—*Clin. vet., Milano*, **77**, 264-268. [English summary.] **2865**

The survival times of *C. bovis* and *C. cellulosae* in small pieces of meat, weighing 100-200 g. and 3-4 cm. thick, at temperatures between -40° and -15°C. varied between 4 and 9 hours. These results would have no practical application in the case of quartered carcasses in which the penetration rate of low temperatures would be much lower.—T. E. GATT RUTTER.

PELLIGRINI, & CILLI. (1955). L'hydatidose en Italie. [Hydatid infection in Italy.]—*Bull. Off. int. Epiz.* **43**, 34-52. **2866**

A survey of the incidence of echinococcus in cattle, sheep, goats, pigs, and man. Figures show the highest incidence in Sardinia and lowest in northern Italy, and a considerable increase of the disease in man during the last 12 years. In Sardinia, up to 8% of dogs harbour *E. granulosus*.—M. L. CLARKE.

MIKACIC, D. 1955. Contribution à l'épizootologie de l'échinococcose, en Yougoslavie. [Epizootiology of echinococcus infestation in Yugoslavia.]—*Bull. Off. int. Epiz.* 43, 53-62. 2867

M. discussed the geographical distribution of echinococcus infestation in Yugoslavia. The condition is more prevalent in central and southern regions than the north, where the incidence is highest in pigs. Four years ago compulsory arecoline treatment of dogs was begun in part of the coastal region where 50% of dogs harbour *E. granulosus*.—M. L. CLARKE.

SCHILLER, E. L. (1954). Studies on the helminth fauna of Alaska. XIX. An experimental study on blowfly (*Phormia regina*) transmission of hydatid disease.—*Exp. Parasit.* 3, 161-166. [Abst. from author's summary.] 2868

S. demonstrated experimental infestation of microtine rodents with echinococcus through transmission of eggs of *E. granulosus* by the blowfly (*P. regina*). He discussed the significance of flies as vectors of echinococcus in relation to public health in the Arctic.

POUPLARD, L. (1954). La strongyloïdose du mouton. [Strongyloidosis in sheep.]—*Ann. Méd. vét.* 98, 259-266. 2869

P. stated that *Strongyloides papillosus* infestation in sheep is becoming more important, and described a case where improvement in hygienic conditions led to a decrease in infestation. He suggested that the adoption of built-up litter as bedding for sheep may lead to a further increase in the incidence of strongyloidosis, since the combination of warmth and moisture present in deep litter can provide optimal conditions for the development of the parasites.—D. POYNTER.

KENNEDY, P. C. (1955). Experimental bovine trichinosis: an attempt to produce eosinophilic myositis of cattle.—*Cornell Vet.* 45, 127-152. [Author's summary modified.] 2870

K. described the histological features of naturally occurring eosinophilic myositis in 5 cattle, and reviewed the literature on this disease.

In an attempt to reproduce the disease, two yearling bulls and a calf were experimentally infected with *Trichinella spiralis*. The course of the disease was followed by haematological examinations, a series of muscle biopsies, and P.M. examination. Eosinophilic myositis was produced in all three animals, and larval encystment was present in two.

The muscles from two of the three infected cattle contained viable trichinae which were infective for rats. K. discussed points of similarity and contrast between the experimentally produced lesions and the natural disease.

DIKMANS, G. & KATES, K. C. (1955). Trichostrongylosis in cattle.—*Proc. helm. Soc. Wash.* 22, 42-46. 2871

In a herd of 38 yearling cattle an 18% mortality rate was produced by a mixed infestation in which *T. axei* and *T. colubriformis* were the predominant worms.

Diagnosis was made by examination of a small quantity of mixed ileum and caecal contents, egg and larval differentiation and the culturing of larvae in worm-free lambs. A complete examination of the contents of the whole alimentary tract was not carried out.

—E. J. L. SOULSBY.

GIBSON, T. E. (1955). Studies on *Trichostrongylus axei*. III. The course of untreated infestations.—*J. comp. Path.* 65, 143-148. 2872

G. had noted in previous work [*V.B.* 24, 3559 & 25, 440] that sheep which died shortly after infestation with *T. axei* manifested different clinical symptoms and lesions from those seen in animals which survived a longer time. The present paper reports an experiment correlating worm egg count with clinical symptoms in the sheep from the time of infestation.

The initial acute phase was associated with rapid loss of weight and a rapidly increasing faecal egg count. This was followed by a transitory phase in which the egg count fell and the animal began to put on weight again. In the final chronic phase the egg count was low and weight gain normal. P.M. examination in the chronic stage reveals ringworm-like lesions in the abomasum.—A.S.

TURNER, J. H. & KATES, K. C. (1954). The pathogenic effect on lambs of a bovine strain of the stomach hairworm, *Trichostrongylus axei*.—*J. Parasit.* 40, No. 5—Sect. 2, p. 13. [Only abst. given. Abst. from abst.] 2873

The authors reported that they established experimentally a bovine strain of *T. axei* in 6 lambs and described the symptoms set up, viz., acute diarrhoea, anorexia and progressive emaciation. Of these lambs 5 died or were killed in extremis.—T. E. GATT RUTTER.

ANDREWS, J. S., SIPPET, W. L. & JONES, D. J. (1954). Clinical parasitism in cattle in the southeast.—*Proc. 57th Ann. Meet. U.S. live Stk sanit. Ass.* 1953, pp. 228-238. 2874

A survey based on PM. examinations of cattle submitted to the Department of Animal Diseases indicated that the incidence of clinical helminth infestation of cattle in South Georgia, U.S.A., had trebled since 1950. This increase in incidence is attributed to poor animal management, and the introduction of cattle which were susceptible to the local species of *Trichostrongylus*. The authors gave the case histories and helminthological data for 14 beasts.

—D. W. JOLLY.

CROFTON, H. D. (1954). The ecology of the immature phases of trichostrongyle parasites.

V. The estimation of pasture infestation.—*Parasitology*, 44, 313-324. 2875

C. described methods for the collection and separation of the larvae from pasture grasses. The distribution of the larvae is influenced by the grazing pattern of the sheep, and the results of observations on 20 flocks indicated that the area occupied at any one time by a flock varied from one third to one sixth of the pasture area. He concluded therefore that the overall sampling of a pasture may give an inaccurate picture of the general level of infestation, because the larvae are not randomly distributed. However, selected sampling can be useful for the study of small areas of pasture, when associated with observations of the grazing habits of the flock.

—D. W. JOLLY.

SEGHETTI, L. (1955). A method for mass recovery and hatching of *Nematodirus* eggs.—*Proc. helm. Soc. Wash.* 22, 53-55. 2876

Nematodirus eggs are concentrated by repeated sieving through progressively finer meshed sieves, the final sieving retaining the ova of species of *Nematodirus*, but allowing the smaller ova of species of *Trichostrongylus* to escape. The eggs thus collected are placed in a constant temperature water-bath at 30°C., when they hatch after 8 to 10 days, the larvae being collected by sedimentation.

—E. J. L. SOULSBY.

PARNELL, I. W., DUNN, A. M. & MACKINTOSH, G. M. (1955). Observations on some preliminary dosing trials with phenothiazine on hill lambs in southern Scotland.—*Brit. vet. J.* 111, 195-202. 2877

II. REEVE, E. C. R. (1955). Observations on some preliminary dosing trials with phenothiazine on hill lambs in Southern Scotland. Statistical analysis.—*Ibid.* 202-206. [Authors' summary modified.] 2878

I & II. Trials with phenothiazine were carried out on hill lambs on 5 farms in Southern Scotland during 1951-52. Lambs were given a

single dose of 17-20 g. by mouth during June-July on 3 of the farms, and in early August on the other two. Changes in worm egg counts and body wt. were compared with the corresponding changes in untreated lambs run together with the treated lambs. The output of eggs of strongyles other than *Nematodirus* and *Strongyloides* was on an average $28 \pm 10\%$ lower, and of *Nematodirus* spp. $37 \pm 12\%$ lower in lambs given phenothiazine; there were no significant differences between farms in this respect. Treated lambs showed no tendency to gain weight more rapidly than untreated lambs.

BOCH, J. (1955). Untersuchungen über die Verbreitung von Magen-Darmstrongyliden bei Weiderindern. [Distribution of stomach and intestinal strongyles in pastured cattle.] —*Dtsch. tierärztl. Wschr.* 62, 89-93. 2879

Microscopic examination of 7,800 faeces samples from 145 herds from various districts showed that 55% of grazing animals were infested with species of *Trichostrongylus*, *Ostertagia*, *Cooperia*, *Nematodirus* and *Oesophagostomum*.

B. emphasized the relationships of clinical and subclinical parasitism to pasture management.—E. J. L. SOULSBY.

VEGORS, H. H., SELL, O. E., BAIRD, D. M. & STEWART, T. B. (1955). Internal parasitism of beef yearlings as affected by type of pasture, supplemental corn feeding, and age of calf.—*J. Anim. Sci.* 14, 256-267. [Authors' summary modified.] 2880

Calves on fescue pastures had heavier worm burdens at autopsy, or were more obviously affected by parasitism, than similar calves on temporary winter or crimson clover pastures. This was due, at least in part, to the lower nutritive value of the fescue grass. The high nutritional quality of temporary and crimson clover forages appeared to reduce the damage caused by the large numbers of parasites which were sometimes acquired on these pastures.

Calves which received a maize supplement generally had fewer worms than controls, irrespective of the type of pasture.

The younger calves, born in spring, had from 2-3 times as many worms as autumn-born calves.

GORDON, H. McL. (1955). Anthelmintic effects of piperazine on helminths of sheep. [Correspondence].—*Aust. vet. J.* 31, 52. 2881

Doses of 4 g. piperazine hydrate, piperazine diacetate or piperazine-1-carbodithioic betaine ("safersan") were 100% effective against *Oesophagostomum columbianum* and *Oes. venu-*

losum in all of 12 sheep when injected into the rumen, but were without effect on *Haemonchus contortus* or *Trichostrongylus* spp. Piperazine hydrate had no effect on *Chabertia ovina*, nor on *Trichostrongylus* spp. nor *H. contortus* when injected into the abomasum.

An emulsion of piperazine hydrate and carbon tetrachloride was highly effective against both *H. contortus* and *Oes. columbianum*. A combination of nicotine sulphate, copper sulphate and piperazine hydrate had similar activity, but some temporary ill-effects accompanied its use.—R. I. SOMMERVILLE.

MICHEL, J. F. & SHAND, A. (1955). A field study of the epidemiology and clinical manifestations of parasitic bronchitis in adult cattle.—*Vet. Rec.* 67, 249-266. [Authors' summary and conclusions modified.] 2882

The authors described in detail 17 outbreaks of husk in adult cattle. Symptoms were very varied, ranging from mild cough to a syndrome identical with that observed in fog fever.

The onset of symptoms is generally sudden and almost simultaneous in all the animals affected. Symptoms occur: (a) 12 days or more after exposure to heavy infection; (b) 12 days or less after a move to aftermath; or (c) without any obvious precipitating cause. The outbreaks had no simple factor in common. There was no evidence of any factor rendering adult animals particularly susceptible, and the plane of nutrition did not appear to play any part.

Sudden exposure to infection was more dangerous than gradual exposure. An animal that had not been exposed to infection for some time appeared to be particularly susceptible.

In most outbreaks the infection was endemic on the farm, but at a subclinical level.

There was considerable circumstantial evidence that larvae passed by carrier animals were the ultimate source of infection and not larvae that had persisted on the ground through the winter. It seems that larvae do not persist on the ground even as long as 5 months.

The small numbers of larvae shed by carrier animals may give rise to a dangerous level of infestation on the ground: (a) by the intervention of calves which become lightly infested but pass a greatly increased number of larvae in their faeces, or (b) directly, where the conditions are particularly favourable for the larvae.

Lush leafy leys appear to represent a particularly favourable vehicle for the survival and transmission of infestation.

The level of infestation on the ground may remain dangerous even after hay has been cut.

MICHEL, J. F. & PARFITT, J. W. (1955). A contribution to the epidemiology of parasitic bronchitis in calves.—*Vet. Rec.* 67, 229-235. [Authors' summary copied *verbatim*.] 2883

There is a close correlation between the number of larvae per pound of herbage and the clinical effect produced on a susceptible calf. The infestation on the herbage is subject to wide fluctuations which may be extremely rapid. Meanwhile the range between a harmless herbage infestation and a lethal one is very narrow. The concentration of larvae on the herbage is affected not only by the numbers passed on to the ground in the faeces but to an even greater extent by climatic and other factors. Under favourable circumstances faeces containing only small numbers of larvae may give rise to a high level of infestation on the herbage. The concentration of larvae on the herbage falls away quickly in spring and early summer but the larvae may persist for four months in autumn and early winter. The infestation of pastures may completely disappear during the winter months.

MICHEL, J. F. (1955). Studies on host resistance to *Dictyocaulus* infection. I. The phenomenon of inhibited development.—*J. comp. Path.* 65, 149-158. [For earlier work see *V.B.* 22, 3122, 3754 & 3755.] 2884

M. reported experiments demonstrating the persistence of immature *Dictyocaulus* worms in calves which were artificially reinfested after they had recovered from infestation. The second infestation was not revealed by faecal larval counts, and work is still in progress to ascertain the fate of the larvae under these circumstances, but immature larvae were present in the lungs for some months. The worms grew more slowly in these calves than in susceptible controls. When susceptible calves were given a single dose or 20 daily doses of larvae a proportion of the larvae did not develop. The fact that such undeveloped worms may persist and retain the power to develop after adult worms have been eliminated is important in the epidemiology of the disease.—A.S.

JARRETT, W. F. H., JENNINGS, F. W., MCINTYRE, W. I. M., MULLIGAN, W. & URQUHART, G. M. (1955). Immunological studies on *Dictyocaulus viviparus* infection. Passive immunisation. *Vet. Rec.* 67, 291-296. [Authors' summary copied *verbatim*.] 2885

Circulating antibodies associated with *D.*

viviparus infections can be detected by means of a complement fixation test.

Hyperimmune serum was obtained by experimental infection of recovered field cases of parasitic bronchitis. A globulin preparation from this serum when injected intraperitoneally into calves conferred a considerable degree of immunity to infection.

PARFITT, J. W. (1955). **Two techniques used for the detection and enumeration of the larvae of *Dictyocaulus viviparus* in faeces and herbage.**—*Lab. Pract.* 4, 15-16. 2886

P. described two techniques for:—(a) estimating the number of larvae of *D. viviparus* per g. of faeces; and (b) the detection and enumeration of larvae of *D. viviparus* in herbage.—T. E. GATT RUTTER.

DUNN, D. R. (1955). **The culture of earthworms and their infection with *Metastrongylus* species.**—*Brit. vet. J.* 111, 97-101. [Abst. from author's summary.] 2887

After describing how earthworms may be cultured D. described a technique for infecting them with *Metastrongylus* species, and for counting the resulting lungworm larvae. Of 6 common earthworm species, *Eisenia foetida* was the easiest to culture and infect.

CZARNOWSKI, A. & WITKOWSKI, E. (1954). **Zapalenie płuc u zająca wywołane przez larwy nicienia *Protostrongylus commutatus*. [*Protostrongylus commutatus* infestation of the lungs in hares.]**—*Méd. vét., Varsovie* 10, 63-64. 2888

The authors recorded the presence of *P. commutatus* in the lungs of a dead hare. Pathological changes in the lungs and bronchi and the presence of larvae in the lungs were considered to have been the cause of death. Since the habitat of the worm is the alimentary tract, the case was considered to be a rare one. —J. R. MITCHELL.

DARRASPEN, E., FLORIO, R. & GUÉDOT, A. (1953). **Electrocardiographie et strongylose cardiopulmonaire du chien. [Electrocardiography of dogs infested with strongyles in the heart and lungs.]**—*Rev. Méd. vét.* 104, 674-689. 2889

An electrocardiogram was recorded for each of 16 dogs with parasitic heart and lung lesions, and confirmed, in 15 cases, the clinical diagnoses of cardiac hypertrophy, myocarditis, etc. Detailed results were given of an E.C.G. recorded for a normal dog, for two with partial heart block, and three with myocardial infarcts. The authors discussed the uses and limitations of an E.C.G. as an aid to diagnosis.

—M. L. CLARKE.

EHRENFORD, F. A. & SNODGRASS, T. B. (1955). **Incidence of canine diroctophymiasis (giant kidney worm infection) with a summary of cases in North America.**—*J. Amer. vet. med. Ass.* 126, 415-417. 2890

The authors reported *Diroctophyme renale* infestation in 5 dogs, bringing the total number of cases observed by themselves and other authors in North America since 1907 to 121. These 5 dogs were the only ones infested with *D. renale* out of 131,000 examined P.M. by the authors.—R.M.

BUNDE, C. A., BLAIR, H. E., BURCH, G. R. & LEE, J. W. (1954). **Ascaricidal action of cadmium.**—*Proc. Soc. exp. Biol., N.Y.* 87, 549-550. [Abst. from authors' summary.] 2891

Cadmium oxide, mixed 0.01–0.02% with dry ground grain (2.6 lb./50 lb. body wt./day) and supplied as the only food for 2 or 3 days effectively expelled ascarids from infested pigs. In this concentration the mixture was palatable and readily eaten.

AKMAN, S., HOLZ, J. & MIMIOGLU, M. (1955). **Die Wirkung von Petroleum auf Rund- und Bandwürmer des Hundes. [Use of kerosene as an anthelmintic against nematodes and cestodes in dogs.]**—*Tierärztl. Umsch.* 10, 83-85. 2892

An emulsion of kerosene, castor-oil, olive-oil and gum arabic was administered *per os* to dogs after overnight fasting. Of 37 dogs infested with ascarids (? *Toxocara*, *Toxascaris*) 35 were negative after five days' treatment, and of 13 infested with tapeworms 11 were negative.—E. J. L. SOULSBY.

SHUMARD, R. F. & EVELETH, D. F. (1955). **A preliminary report on the anthelmintic action of piperazine citrate on *Ascaridia galli* and *Heterakis gallinae* in hens.**—*Vet. Med.* 50, 203-205. 2893

In groups of fowls given access to drinking water containing 8 and 16 g. of piperazine citrate per gal. for periods varying from 1–4 days, 100% efficiency against *Ascaridia galli* was obtained, but the compound was less efficient against *Heterakis gallinae*. Three days' field treatment with a conc. of 10 g. per gal. yielded similar results.—D. POYNTER.

DEBELMAS-LORENTZ, A. M. (1954/55). **Contribution à l'étude du pouvoir anthelminthique des essences végétales et de certains de leurs constituants. [Anthelmintic action of vegetable oils.]**—*Rev. Path. comp.* 54, 1343-1404 & 55, 2-51. 2894

An extensive and comprehensive study was made of the anthelmintic properties of vegetable oils. *In vitro* methods included kymographic recording of isolated portions of *Ascaris* and *in vivo* methods utilized mice parasitized with oxyurids and with *Hymenolepis* cestodes.

In an analysis of the molecular structures which predisposed to an anthelmintic activity it was found that the allyl and propenyl chains were more active than the aldehyde chain, that the *ortho* position was more toxic than the *para* and that a lateral carbon chain with double bonds was markedly anthelmintic.

—E. J. L. SOULSBY.

ANTIPIN, D. N. (1954). [Anthelmintics for domestic animals (A symposium.)]—*Veterinariya, Moscow*. 31, No. 4, pp. 23-27. [In Russian.] 2895

A report of a symposium at which 18 papers were read. No new data of great importance emerged. Kushnir, M. M. reported that seeds of *Ledum palustre* had effective anthelmintic action in pigs infested with *Macracanthorhynchus*. Egorov, I. F. stated that *Fasciola* occasionally lived for over 8 years in sheep. Pavlovich, I. K. reported that eggs of *Dicrocoelium lanceolatum* remained viable for over 5 years in dry faeces and for 16 months in turf.—F. A. ABBEY.

MERLE, A. (1955). L'habronémose cutanée en France. [Cutaneous habronemiasis in France; treatment with X-rays.]—*Bull. Off. int. Epiz.* 43, 170-176. 2896

M. gives a general account of "summer sores" due to *Habronema megastoma*. Recently, encouraging results have been obtained with irradiation therapy. The mobile apparatus used, taking 4 milliamperes at 100 kilovolts produces 94 roentgens a minute, at a distance of 20 cm. Two irradiations, lasting 10 min., with an 8-day interval, are sufficient to cure recent lesions, where the surrounding tissue is fairly loose. It may, however, be necessary to prolong treatment in long-standing cases.

Following irradiation pruritus rapidly disappears, and 24 hours later a serosanguineous discharge occurs with congestion around the lesions. This subsides and final cicatrization occurs after a sufficient number of exposures has been given.—M. L. CLARKE.

BAUMANN, R. (1955). Beobachtungen über das Vorkommen von *Parafilaria multipapillosa* in Österreich. [Occurrence of *P. multipapillosa* in horses in Austria].—*Wien. tierärztl. Mschr.* 42, 168-170. [English, French and Italian summaries.] 2897

A brief report of *P. multipapillosa* infestation in horses. The presence of flies on the bleeding nodules suggests their possible role as vectors.—M. L. CLARKE.

GUILHON, J. & GRABER, M. (1953). Une nouvelle filaire du chien en France. [*Dirofilaria repens* recorded in a dog in France.]—*Bull. Acad. vét. Fr.* 26, 467-469. 2898

A clin. note reporting the discovery of *D. repens* in the s/c tissue of a dog. This is the first time that this species has been recorded in France.—A.S.

KARTMAN, L. (1954). Frequency and intensity of *Dirofilaria immitis* infections in mosquitoes.—*Exp. Parasit.* 3, 25-29. 2899

Using the same canine host K. finds the number of developing *D. immitis* in any one species of mosquito is proportional to the infection rate in that species.—D. POYNTER.

WEBBER, W. A. F. & HAWKING, F. (1955). Experimental maintenance of *Dirofilaria repens* and *D. immitis* in dogs.—*Exp. Parasit.* 4, 143-164. [Authors' summary modified.] 2900

The authors found that the microfilariae of *D. repens* show periodicity, the maximum count in the peripheral blood occurring about midnight and the minimum about mid-day; the minimum number is about 20-40% of the maximum.

Microfilariae developed in *Anopheles stephensi*, less regularly in *A. maculipennis atroparvus*, and moderately well in *Aedes aegypti*.

Of 18 dogs inoculated with infective larvae 13 became infested. Only about 5% of the original infective larvae survived to be recovered as adult worms from the dogs which were ultimately found to harbour microfilariae.

The prepatent period (before microfilariae were found in the blood) was about 26 weeks; the patent period lasted from about 17 months to over 3 years.

Worms which had been 43 months in dogs were removed and implanted under the skin of two other dogs. Microfilariae appeared in the blood of the recipient dogs after 5-6 days, and increased progressively in number; from their rate of increase it could be calculated that on the average each worm produced about 5,000 microfilariae per day.

Corresponding findings were reported for a strain of *D. immitis*.

SHOHO, C. & TANAKA, T. (1955). Further observations on cerebrospinal nematodiasis in animals. II.—The problems of reinfection

by nematodes and clinically-silent cases.
—*Brit. vet. J.* 111, 102-111. 2901

The authors described old and new lesions in the c.n.s. of sheep which had been infested with nematode larvae in successive seasons.

They suggested that preventive treatment with diethylcarbamazine acid citrate should be repeated annually where the condition is enzootic.

They described nematode lesions in the brains of horses which had presented no clinical symptoms.—A.S.

BROWNE, S. G. (1954). Nematodosis of the central nervous system.—*J. Trop. Med. (Hyg.)* 57, 229-233. 2902

A case report of a woman in the Belgian Congo with clinical evidence of a lesion involving the structure of the right cerebello-pontine angle. The patient was affected with loiasis

(*Loa loa* infestation) with typical Calabar swellings especially on the face and near the eyes.

In the absence of any other cause for the nervous symptoms it is suggested that the brain lesion was due to an intracranial swelling caused by the *L. loa* infestation.

The literature on association between nematode larval migration and lesions of the central nervous system is discussed.

PERUMAL PILLAI, C. (1954). "Kumri" in horses.—*Reporter, Ceylon* 2, 76-77. [Mimeographed.] 2903

An account of a paralytic condition of horses in Ceylon resembling the disease known as "kumri" in India. It is suggested that it is caused by the presence in the c.n.s. of larvae of *Setaria digitata*. The natural host is the ox, in which the larvae are found in the peritoneum and mesentery.—W. S. MARSHALL.

See also absts. 2971 (animal diseases in the Caribbean); 2972 (mixed salmonellosis and intestinal parasites in fowls); 3075 (report, Leeward Islands); 3077 (report, health service for homing pigeons, Netherlands); 3078 (report, Algeria).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

PEDINI, B. (1954). Proteinuria di Bence Jones in una vitella. I. Identificazione con il calore. II. Identificazione a freddo con acidi. [Proteinuria, similar to that described as occurring in human beings by Bence-Jones, in a calf with a plasmocytoma. I. Reaction of the urine to heat. II. Reaction of the urine to cold and acids.]—*Atti Soc. ital. Sci. vet.* 8, pp. 677-679 & 679-681. 2904

The peculiar protein known in human medicine as the Bence-Jones protein occurs in the urine in cases of plasmocytoma. It differs from proteins normally present in the body in that it coagulates when the urine is heated to 56°C., redissolves on boiling, and coagulates again on cooling. A protein having these properties was present in the urine of a calf aged 5 months with plasmocytoma [symptoms and pathology not described].—R.M.

BROWN, J. M. M. (1954). Hypertrophic pulmonary osteoarthropathy in dogs.—*J. S. Afr. vet. med. Ass.* 25, 35-44. 2905

A brief review of the literature, and a description of 2 cases.—E. COTCHIN.

COTCHIN, E. (1955). Melanotic tumours of dogs.—*J. comp. Path.* 65, 155-129. 2906

C. gave an account of 101 melanotic tumours in dogs. He described their histological nature, and distribution according to age, sex, and breed.—A.S.

RIGDON, R. H. (1954). Spontaneous occurrence and regression of haemangiomas in chickens.—*Stwest. Vet.* 7, 311-315. [Authors' summary modified.] 2907

A note reporting spontaneous haemangiomas in the skin and muscle tissue of 11 fowls. Other types of neoplasms were also found in some of these fowls. Several of the haemangiomas were observed to regress during a period of 2 to 6 months.

SEIBOLD, H. R., BAILEY, W. S., HOERLEIN, B. F., JORDAN, E. M. & SCHWABE, C. W. (1955). Observations on the possible relation of malignant esophageal tumours and *Spirocerca lupi* lesions in the dog.—*Amer. J. vet. Res.* 16, 5-14. [Authors' summary modified.] 2908

Seven malignant oesophageal tumours in dogs are described. In 6 of the 7 cases the tumour actually or apparently occurred in relation to *Spirocerca lupi* lesions. Four tumours occurred in the region of lesions containing the parasites. In 2 cases no parasites were noticed on P.M. examination, but the presence of deformative ossifying spondylitis affecting the posterior thoracic vertebrae gave presumptive evidence of infection with *Spirocerca*. The remaining tumour was a surgical specimen sent to the laboratory without history. All 7 occurred in the region of the oesophagus where *Spirocerca* lesions normally occur.

Two of the tumours were fibrosarcomas, and 5 were osteosarcomas, 3 of which had metastasized. Hypertrophic pulmonary osteoarthropathy was found in association with the 2 fibrosarcomas and one of the osteosarcomas.

RIGDON, R. H. & BRASHEAR, D. (1954). **Experimental production of squamous-cell carcinomas in the skin of chickens.**—*Cancer Res.* **14**, 629-631. [Authors' summary modified.] 2909

A histological squamous-cell carcinoma occurred in the skin of 5 chickens in a group of 18 treated with an acetone solution of methylcholanthrene. Five other chickens, similarly treated, developed one or more ulcerative lesions microscopically identical with those studied histologically and referred to above. The lesions in the latter 5 chickens regressed spontaneously within 2-8 weeks.

GREENE, H. S. N. (1955). **Attributes of embryonic tissues after growth and development in heterologous hosts.**—*Cancer Res.* **15**, 170-172. [Authors' summary copied verbatim.] 2910

The transplantation of embryonic skin from man, dog, cat, g. pig, and rabbit to the subcutaneous space of the hamster and the DBA mouse resulted in growth and differentiation without attendant inflammatory reaction. Typical papillomas occurred in mature transplants of embryonic rabbit skin following exposure to the Shope virus and, from the point of view of susceptibility to infection, identified the transplants as rabbit in nature.

GAYLORD, W. H., Jr. (1955). **Virus-like particles associated with the Rous sarcoma as seen in sections of the tumor.**—*Cancer Res.* **15**, 80-83. [Authors' summary modified.] 2911

Virus-like particles were observed in sections of two Rous sarcoma tumours, but not in a third. The particles were numerous in the youngest tumour, occurring singly, in pairs, or in small clusters usually on the outer surface of the cell membranes. The particles were round, dense, and about 500 Å in diam. They consisted of thin limiting "membranes" and a very dense central mass which was round or stellate. Occasionally, particles appeared vacuolated without a central mass.

SALOMON. (1955). Ein Beitrag zur Leukose beim Schwein. [Leucosis in pigs.]—*Mh. VetMed.* **10**, 109-111. 2912

Three meat-inspection case reports.

—E. COTCHIN.

CAVRINI, C. & GENTILE, G. (1954). Sulla eventuale natura virale delle leucosi del cane. [The possible virus nature of canine leucosis.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 732-735. [French and German summaries.] 2913

The authors discussed the possible virus nature of leucosis in dogs, referring to the work of Vendramini *et al.* [*V.B.* **22**, 3770]. They also inoculated blood from 3 leukaemic dogs into g. pigs by various routes, but the results were negative.—R.M.

LOVE, R. & SHARPLESS, G. R. (1954). **Studies on a transplantable chicken tumor (RPL-12 lymphoma). II. Mechanism of regression following infection with an oncolytic virus.**—*Cancer Res.* **14**, 640-647. [Authors' summary modified.] 2914

When the RPL-12 chicken lymphoma is transplanted into the pectoral muscle of chickens, superimposed infection with the N.F.T. strain of St. Louis encephalitis virus induces regression and a significant reduction in mortality. Infection with the virus does not produce oncolysis when the tumour is transplanted into the brain. The virus multiplies in the tumour but does not destroy the tumour cells; it produces specific changes in the cells which (a) render them susceptible to phagocytosis and (b) increase their ability to stimulate the local and splenic defence mechanisms of the host. The failure of virus infection to induce regression when the tumour is grown in the brain is attributed to a deficiency of the host's defences. The inflammatory changes in the brain after the inoculation of the virus are accentuated, but their onset is delayed one or two days by the presence of the RPL-12 tumour in the brain or muscle, respectively. When the tumour is grown in the muscle, the lesions produced by the virus infection are still, however, inconspicuous and unaccompanied by any clinical signs of illness.

BURMESTER, B. R. (1955). **Immunity to visceral lymphomatosis in chicks following injection of virus into dams.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 153-155. [Authors' summary modified.] 2915

Results obtained in experiments involving 14 immunized hens and 300 test chicks indicate that the virus of visceral lymphomatosis is capable of inducing antibodies in adult fowls, and that these antibodies are transmitted to the chick *via* the egg, conferring on the chick a significant immunity to challenge inoculation.

NUTRITIONAL AND METABOLIC DISORDERS

PARSONS, A. R., NEUMANN, A. L., WHITE-HAIR, C. K. & SAMPSON, J. (1955). Isolated gut and rumen motility as affected by extracts from bloat producing forages. — *J. Anim. Sci.* **14**, 403-411. **2916**

The authors discussed the theory that bloat is caused by the ingestion of toxic factors which inhibit intestinal motility. They found that the motility of rabbit intestine *in vitro* was inhibited by plant juices extracted from representative forage samples from bloat-producing pastures, and also by rumen samples from cows with bloat. Freezing did not affect the action of the samples.

An extract of Ladino clover known to cause bloat inhibited eructation in a fistulated cow.

—A.S.

NICHOLS, R. E., MOORE, W. E. C. & DILLON, R. D. (1955). The effect of buoyancy of the rumen juice of cattle fed hay, grass and fresh legumes.—*J. Anim. Sci.* **14**, 276-278. **2917**

The authors measured the buoyancy (specific gravity) of the rumen liquid in a rumen-fistulated cow after it had consumed various types of feed. The buoyancy after intake of fresh legumes was higher than that after hay or fresh grass.—A.S.

PUNTRIANO, G. O. (1955). Further research on the prevention of kidney stones in sheep from the colloidal approach.—*Amer. J. vet. Res.* **16**, 101-104. [Author's summary modified.] **2918**

The effects of a urinary calculi-predisposing ration were tested on three groups (A, B, and C) of 6 lambs each. The 6 lambs of control group D received alfalfa (lucerne) hay only. Fresh water, free choice, was supplied to all the sheep. The sheep in group A, which received a treatment with hyaluronidase pellets, implanted subcutaneously in the neck, did not develop a crystalloid-colloid imbalance in their urine, nor urinary calculi, while those in Groups B and C developed a crystalline-colloid imbalance in their urine and some developed urinary calculi. These phenomena were not observed in the controls. P. suggested that excess of silicon eliminated in the urine was responsible for the crystalloid-colloid imbalance and for the urinary calculi, and that hyaluronidase helped to maintain the crystalloid-colloid balance in the urine, and to prevent the incidence of urinary calculi by supplying an extra amount of protective colloids. [See also *V.B.* **24**, 2030.]

STEINER, P. E., RASMUSSEN, T. B. & FISHER, L. E. (1955). Neuropathy, cardiopathy, hemosiderosis, and testicular atrophy in Gorilla gorilla.—*Arch. Path.* **59**, 5-25. **2919**

An account of the symptoms and P.M. examination of a large gorilla in a zoological garden which became paralysed and died at the age of 22 years. The P.M. findings were haemosiderosis and atrophy of the liver and spleen, dilatation, fibrosis and arteriosclerosis of the heart, degenerative changes in the spinal cord and dorsal root ganglia, and marked atrophy of the testicles. The authors suggested that, in view of other reports of paralysis and failure to breed in captive gorillas, these animals may have some special nutritive requirement not present in the food normally given to them.—R.M.

EAYRS, J. T. & LISHMAN, W. A. (1955). The maturation of behaviour in hypothyroidism and starvation.—*Brit. J. Anim. Behav.* **3**, 17-24. **2920**

The authors studied the effects of hypothyroidism and starvation on the maturation of "innately organized behaviour" and adaptability to new environment in rats. Maturation was slower than in the controls during the first 24 hours of life, and the effect of hypothyroidism was more marked than that of starvation. Later in life, adaptability was higher but performance was lower. Adequate feeding of starved rats and thyroxine treatment of cretinoids restored normal performance. The significance of these results in relation to the irreversibility of cerebral defects in human cretins was discussed.—T. E. GATT RUTTER.

BASSETT, E. G. & WHITE, E. P. (1955). Oestrogens and New Zealand dairy pastures.—*N.Z.J. Sci. Tech. Sect. A*, **36**, 485-492. **2921**

The authors reported an experiment to test the theory that the stimulation of milk yield in cattle on lush pasture grass was the result of a high oestrogenic content in the grass. Peak milk production was obtained when the pasture was most lush, but mouse tests failed to indicate the presence of oestrogens in the pastures at any time during the experiment. Red and subterranean clovers from the same district had high oestrogenic activity, but neither of these was present in the typical New Zealand dairy pasture used in the experiment.—A.S.

DODI, B. (1954). La responsabilità di talune farine di pesce nell'aborto occasionale. [Abor-

tion in cattle caused by the feeding of certain fish meals.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 355-358. [English and French summaries.] 2922

D. observed that extracts of poor quality fish meals caused contractions of the uterus of g. pigs and rabbits *in vitro*. Such meals might, therefore, be the cause of occasional abortion in cows.—R.M.

SCHREIBER, G. (1954). Die Fütterung als Unfruchtbarkeitsursache beim Rind. [Sterility in cattle caused by faulty nutrition.]—*Tierärztl. Umsch.* **9**, 278-283. 2923

A general article on infertility in cattle in relation to nutrition.—A.S.

TURMAN, E. J. & ANDREWS, F. N. (1955). Some effects of purified anterior pituitary growth hormone on swine.—*J. Anim. Sci.* **14**, 7-18. 2924

The authors reported a small experiment in which pigs injected with one or other of 3 commercial growth hormone preparations consumed less food per day and were more thrifty than controls.

Their carcasses contained more protein and less fat than controls and their blood glucose was higher. Examination of the anterior lobes of the pituitary glands revealed a higher concentration of gonadotrophic and thyrotrophic hormones than in controls.—A.S.

MCCLURE, F. J. & FOLK, J. E. (1955). Observations on the production of smooth-surface rat caries by diets containing skimmilk and whey powders.—*J. Nutr.* **55**, 589-599. [Authors' summary modified.] 2925

Rats fed diets in which the protein was supplied in the form of three different skim milk powders, developed dental caries which occurred predominantly on lower buccal areas. The incidence of caries and the average number of teeth affected varied in a manner which paralleled the severity of the heat treatment necessary for the preparation of the milk powders. Diets containing spray-process and roller-process powders were both much more cariogenic than a diet containing a lyophilized milk powder. The most severe caries was associated with the diet containing a roller-process powder.

ROY, J. H. B., SHILLAM, K. W. G., PALMER, J. & INGRAM, P. L. (1955). The nutritive value of colostrum for the calf. XI. The effect of aureomycin on the performance of colostrum-deprived calves.—*Brit. J. Nutr.* **9**, 94-103. [See also *V.B.* **25**, 2292.] 2926

Using 6 lots of 4 Shorthorn calves and 4

lots of 4 Ayrshire calves the authors carried out a randomized block experiment to observe the effects of 4 treatments. These were:—(1) no colostrum given and no chlortetracycline (aureomycin) supplement in the diet; (2) no colostrum given but diet supplemented with "aurofac" (a proprietary fermentation product of aureomycin, containing vitamin B₁₂); (3) no colostrum given but diet supplemented with crystalline aureomycin; and (4) colostrum given but diet not supplemented with aureomycin.

All calves given colostrum survived, but 4 on treatment (1) died, and all on this treatment gained less weight and scoured more severely than those on other treatments. Two colostrum-deprived calves given aureomycin died.

The authors concluded that aureomycin in crystalline form or as aurofac reduced the incidence of scouring in calves deprived of colostrum, and raised their growth rate to that of calves given colostrum. They noted that in this experiment the majority of calves deprived of colostrum and fed whole milk survived: in earlier experiments the majority of calves deprived of colostrum and fed "synthetic milk" had died. There was no apparent difference between Ayrshires and Shorthorns in their response to the treatments.—A.S.

MCEERLEA, R. A. (1955). Effect of feeding an aureomycin supplement "aurofac" to runt pigs.—*Irish vet. J.* **9**, 108-112. [Author's summary modified.] 2927

An account of two experiments in which the addition of a supplement of a preparation of chlortetracycline (aureomycin) to unthrifty piglets increased the daily live wt. gain by 24.6% and 11.6%, respectively. The efficiency of food utilization was not appreciably affected. The only advantage of the supplement was a saving of time and labour. The growth responses were obtained on a diet containing separated milk powder.

DAVEY, R. J., GREEN, W. W. & STEVENSON, J. W. (1955). The effect of aureomycin on growth and reproduction in swine.—*J. Anim. Sci.* **14**, 507-512. [Authors' summary and conclusions modified.] 2928

The authors studied growth and reproduction in successive generations of pigs given chlortetracycline (aureomycin) at levels of 10.0, 50.0, and 100.0 mg. per lb. of feed. Supplementation at 50 mg./lb. produced the most rapid gains in each generation. Aureomycin given continuously at these levels had no deleterious effect on growth or reproduction.

TAYLOR, J. H. & HARRINGTON, G. (1955). **Influence of dietary antibiotic supplements on the visceral weights of pigs.** [Correspondence.] — *Nature, Lond.* **175**, 643-644. **2929**

Of groups of pigs fed chlortetracycline (aureomycin) or penicillin at varying levels (av. = 30 p.p.m.) those of the latter groups had considerably greater visceral weights. The small intestine and the spleen were lighter in those fed aureomycin than in controls; with penicillin the difference was not significant. Penicillin led to an increase in the weight of the liver. The stomach, caecum and large intestine were not affected. These findings would indicate a different mode of action for the two antibiotics.—P. H. HERBERT.

EDWARDS, S. J. & HASKINS, M. D. (1955). **The determination of antibiotic content in supplemented feeding-stuff.** — *J. Sci. Fd Agric.* **6**, 218-229. [Authors' summary copied *verbatim*.] **2930**

The paper described the use of a tube serial-dilution test in broth and a paper-disc method in plates for assaying the concentration of penicillin and aureomycin in supplemented meals used for feeding to pigs. In the serial-dilution test an aqueous extract of the meal is prepared and the concentration determined by comparing its inhibitory end-point with that of extracts prepared from standard control meals containing known amounts of antibiotic. The results of the dilution test showed that it is possible to assign to test meals a concentration value falling within a narrow range, and that the test is not subject to interference by non-specific substances in the meal. The paper-disc method was found to be satisfactory but the technique is more difficult than that of the dilution test.

URAM, J. A., FRENCH, C. E., BARRON, G. P. & SWIFT, R. W. (1955). **The effect of high levels of terramycin or streptomycin on growth, reproduction and lactation of the rat.** — *J. Nutr.* **55**, 481-492. **2931**

Groups of recently weaned male and female rats were fed different diets, viz.: natural basal (control); basal plus 0.4% oxytetracycline (terramycin); basal plus 0.4% streptomycin. The animals were bred at 4 months of age and again one month after weaning their young. Reproduction ability of the three groups remained the same. The weight gains of offspring of dams fed supplemented diets were significantly greater than those of the controls during the period 3rd-14th day *post partum* (lactation performance) and also during the period 14th-21st day

(lactation plus food). The same results were observed in a smaller second generation. During lactation, food consumption by dams of the three groups remained the same throughout. Thirty-seven per cent of the streptomycin and 80% of the terramycin was eliminated in active form in the faeces. Neither antibiotic had any significant effect on the liver fat content of rats of either sex.—T. E. GATT RUTTER.

BOHMAN, V. R., HUNTER, J. E. & WALKER, L. G. (1955). **Antibiotics and B-vitamins for lambs.** — *J. Anim. Sci.* **14**, 111-117. [Authors' summary modified.] **2932**

Graded levels of chlortetracycline (aureomycin) with and without a supplement of B-vitamins were fed to 120 fattening lambs from 2-4 weeks of age until they reached market weight. These treatments did not significantly improve the rate of gain, dressing percentage or carcass grade.

BECKER, D. E., ULLREY, D. E., TERRILL, S. W. & NOTZOLD, R. A. (1954). **Failure of the newborn pig to utilize dietary sucrose.** *Science*, **120**, 345-346. **2933**

Four groups of new-born piglets were fed a standard diet differing only in the carbohydrate ingredient. Failure to hydrolyse the glycosidic linkage between the fructose and glucose moieties of sucrose was apparently the primary factor concerned in failure to grow and survive on diets high in this sugar. Assuming that a limited degree of hydrolysis was accomplished the inability to utilize fructose also probably restricted performance.—D. POYNTER.

KAUNITZ, H., SLANETZ, C. A. & JOHNSON, R. E. (1955). **Antagonism of fresh fat to the toxicity of heated and aerated cottonseed oil.** — *J. Nutr.* **55**, 577-587. [Author's summary modified.] **2934**

The inclusion in a rat diet of 15 to 20% of refined cottonseed oil, aerated and heated to 95°C. for 200 to 300 hours, led to rapid loss of weight and death within three weeks. The condition was accompanied by diarrhoea and by the occurrence of enlarged liver, kidneys, and adrenals and a small spleen and thymus. Histologically, the only change was an occasional intestinal oedema.

Addition of fresh oil to the diet containing the heated and aerated oil protected the animals against the toxicity. Only growth retardation persisted. This protective effect could also be observed in paired-feeding experiments in which the paired rats received the same number of calories and equal amounts of protein and of

treated oil. When fresh cottonseed oil was fed by dropper instead of being included in the diet, its protective effect was only slight.

SILBERBERG, M. & SILBERBERG, R. (1954). **Factors modifying the lifespan of mice.**—*Amer. J. Physiol.* **177**, 23-26. 2935

Two particular strains of mice were used and the effect of a high-fat diet was found to shorten the life of mice of both strains — particularly the males. This effect appeared to be partly independent of the condition of overweight.—W. S. MARSHALL.

FALASCHINI, A., BIONDO, G. & LEONTI, F. (1954). Sulle modificazioni della protidemia nei caprini in rapporto all'età ed al regime alimentare. [Protein content of the blood of goats in relation to age and nutrition.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 388-391. [English and French summaries.] 2936

The authors determined at monthly intervals by electrophoresis and by chemical analysis the protein, albumin and globulin content of the blood of 15 goats from one month of age to six months. Eight of them were given a normal diet while seven were given a diet containing rancid rice meal. Apart from significant differences in the values obtained by the two methods employed, there were differences in the protein, albumin, and globulin content of the blood in the two groups of goats, and other changes associated with age.—R.M.

MANNELL, W. A. & ROSSITER, R. J. (1954). **Nutritional deficiency and Wallerian degeneration in the rat. I. Effect of protein depletion on the concentration of nucleic acid and phospholipid in intact and sectioned nerves. II. Effect of thiamine deficiency on the concentration of nucleic acid and phospholipid in intact and sectioned nerves.**—*Brit. J. Nutr.* **8**, 44-55 & 56-64. 2937

The authors carried out a series of experiments to assess the nucleic acid and phospholipoid contents of intact and of degenerating nerve in protein-deficient rats. The results were compared with those in rats of the same age on an adequate-protein diet; rats of the same age on restricted quantities of an adequate-protein diet; and younger rats on adequate-protein diet.

—T. E. GATT RUTTER.

MAGEE, D. F. (1954). **Effect of essential amino acids on cholic acid production in dogs.**—*Amer. J. Physiol.* **176**, 223-226. 2938

M. suggested that casein stimulates cholic acid production in proportion to its content of essential, rather than ketogenic, amino-acids.

—P. H. HERBERT.

PLUMMER, P. J. G. & BOULANGER, P. (1954). **Some pathological effects of ethionine in the rabbit.**—*Canad. J. comp. Med.* **18**, 237-243. 2939

The pathological picture in rabbits treated with ethionine [α -amino- γ -ethylthiobutyric acid, the ethyl-analogue of methionine] differed from that in g. pigs. The immediate cause of death was a massive haemorrhage in the sublumbar, perirenal or periovarian regions which did not appear to be due to injury to the vascular endothelium.—R. GWATKIN.

SHANKS, P. L. & DONALD, L. G. (1955). **An unusual mouth condition in sheep.**—*Vet. Rec.* **67**, 312-313. 2940

The authors described a condition in hogs on reseeded pastures. This was characterized by inability to close the mouth, emaciation and weakness, and hyperexcitability. The calcium and phosphorus contents of the blood were low. Enquiries into the grazing history of the sheep revealed the probability of gross calcium and phosphorus deficiency in the pasture. The authors considered that this might be the cause of the condition in the hogs and emphasized the need for care in the stocking of reseeded pastures.—T. E. GATT RUTTER.

HOFFERBER, O. & DIENEMANN, R. (1954). Der Gehalt des Blutserums klinisch gesunder Ziegen an Kalzium, Phosphor und Magnesium. [Calcium, phosphorus and magnesium content of the serum in healthy goats.]—*Mh. VetMed.* **9**, 428-431. 2941

A general account of the metabolism of calcium, phosphorus and magnesium in goats. —A.S.

HOUSE, W. B. & HOGAN, A. G. (1955). **Injury to guinea pigs that follows a high intake of phosphates. The modifying effect of magnesium and potassium.**—*J. Nutr.* **55**, 507-517. 2942

The authors reported the results of experiments which, they considered, confirmed their view that a high phosphate intake was injurious to g. pigs. The effects produced were a slower rate of weight gain, stiffness of the joints associated with calcium phosphate deposits, and a high mortality rate. These effects were most severe in groups on rations containing 0.9% calcium, 1.70% phosphorus, 0.04% magnesium, and 0.41% potassium. There was a marked improvement when the magnesium and potassium contents were increased to 0.35% and 1.5% respectively.—T. E. GATT RUTTER.

ARRINGTON, L. R. & DAVIS, G. K. (1955). **Metabolism of phosphorus³² and molybdenum⁹⁹ in rats receiving high calcium diets.**—*J. Nutr.* **55**, 185-192. [Authors' summary modified.] **2943**

The metabolism of ³²P and ⁹⁹Mo was studied in mature rats which were consuming normal and high calcium diets. A decreased urinary excretion and increased tissue deposition of ³²P demonstrated a significant retention of phosphorus when the intake of calcium was high. Metabolism of Mo⁹⁹ was not changed by the increase in dietary calcium. The rapid elimination of molybdenum *via* the urine was demonstrated, 50% of the oral dose being excreted during the first 12 hours.

HOVE, E. L. & HERNDON, J. F. (1955). **Potassium deficiency in the rabbit as a cause of muscular dystrophy.**—*J. Nutr.* **55**, 363-374. **2944**

The minimum potassium requirement for maximum growth in the rabbit was estimated at 0.6%. When the level was 0.3% or below, death occurred within 6 weeks with characteristic pathological changes. The blood-cell sodium increased while the urine sodium decreased. There was a rapidly progressive muscular dystrophy with a closely associated creatinuria. P.M. lesions included dystrophy of the limb muscles, myocardial necrosis and scarring, numerous small gall bladder concretions, multiple haemorrhagic areas in the stomach, swelling and pale coloration of the kidneys and occasional jaundice.

—T. E. GATT RUTTER.

WIDDOWSON, E. M. & McCANCE, R. A. (1955). **The effect of suckling anaemia on the pig's heart.**—*Brit. J. exp. Path.* **36**, 175-178. [Authors' summary slightly modified.] **2945**

In piglet anaemia the cardiac output increases considerably and the heart grows proportionately faster than the body. The authors concluded that this "hypertrophy" was due to an increase in the number of normal muscle cells, because no change has been found in (a) the quantity of water, of protein or of mineral salts in unit weight of heart muscle; (b) the deoxyribonucleic acid-protein-water relationships within the heart.

BROWNLIE, W. M. (1955). **The treatment of piglet anaemia.**—*Vet. Rec.* **67**, 350-354. [Author's summary modified.] **2946**

Two iron preparations for the treatment of piglet anaemia by intramuscular injection were tested and the iron utilization rate was measured and compared with that of oral reduced iron.

One preparation, a suspension of ferric phosphate in normal saline containing 50 mg. Fe per ml., provided little or no iron for haemoglobin formation. The other preparation, an iron-dextran complex containing 50 mg. Fe per ml., was highly active and most of it had been used for Hb formation a week after administration.

EISMA, W. A., HOSKAM, E. G., DORSMAN, W. & WIERINGA, G. W. (1955). **Enige waarnemingen over het zogenaamde kopergebrek bij runderen. [Observations on conditions in cattle attributed to copper deficiency.]**—*Tijdschr. Diergeneesk.* **80**, 247-255. [English, French and German summaries.] **2947**

In some herds that were clinically suspected to be affected with copper deficiency, the copper content of the grass that was fed proved to be normal and treatment with copper sulphate was ineffective. In these cases the causes of the clinical symptoms were insufficiently fertilized grass, parasitic infestation, etc.

—C. A. VAN DORSSEN.

GRASHUTS, J. (1955). **Klinische lessen over sporenelementen. II. Koper. [Clinical studies of trace elements. II. Copper.]**—*Tijdschr. Diergeneesk.* **80**, 379-399. **2948**

G. discussed the literature. In cases of copper deficiency he advised administration of copper sulphate in the food: adult cattle 2-5 g., heifers 1-2.5 g., calves 0.5-1 g., sheep 0.1 g., baby pigs 5 mg. In his experience many cases of supposed copper deficiency had proved to be cobalt deficiency.—C. A. VAN DORSSEN.

KERCHER, C. J. & SMITH, S. E. (1955). **The response of cobalt-deficient lambs to orally administered vitamin B₁₂.**—*J. Anim. Sci.* **14**, 458-464. **2949**

The authors studied the therapeutic value of vitamin B₁₂ given by mouth in large doses to cobalt-deficient sheep. The administration of 500 µg. daily with the food was curative, the responses in body wt., haemoglobin level and appetite being comparable with those in sheep which received a total of 500 µg. by injection over a period of 2 weeks.—A.S.

KING, R. P., BOLIN, D. W., DINUSSON, W. E. & BUCHANAN, M. L. (1953). **A chromatographic method for the determination of cobalt in feeds.**—*J. Anim. Sci.* **12**, 628-634. **2950**

After ashing, a nitroso-complex is formed which is then purified and concentrated, prior to colorimetric estimation, on a perchloric acid

washed alumina column. Removal of iron and copper is stated to be unnecessary.

—P. H. HERBERT.

VAN DYKE, D. C., ASLING, C. W., BERLIN, N. I. & HARRISON, R. G. (1955). **Failure of cobalt to influence the life span of the erythrocyte.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 488-489. [Authors' summary modified.] **2951**

The authors reported work demonstrating that the life span of the red cell is not prolonged in rats rendered polycythaemic by administration of cobalt. The mechanism for the production of polycythaemia following continuous administration of cobalt must therefore, they argued, be attributed to an increase in the rate of production and release of red cells into the circulation.

VAN REEN, R. & PEARSON, P. B. (1955). **Manganese deficiency in the duck.**—*J. Nutr.* **55**, 225-234. [Authors' summary modified.] **2952**

In studies on the effects of a dietary deficiency of manganese, using ducklings, it was found that 40 mg. of Mn. per kg. of diet are adequate for normal growth and prevention of perosis. Alkaline phosphatase activity of liver, kidney, heart and plasma was reduced during the deficiency. The decreased enzyme activity could not be correlated with the presence of an inhibitor or an altered pH optimum of alkaline phosphatase.

CUNNINGHAM, I. J. (1955). **Molybdate top-dressing and animal health.**—*N. Z. J. Agric.* **90**, 196-202. **2953**

Indiscriminate use of molybdenum fertilizers is increasingly prevalent because of the spectacular (up to 60%) improvement of pastures that sometimes results and because it is believed that liming may thereby be reduced. This practice may result in molybdenum poisoning of livestock — peat scours in cattle and copper-deficiency in young cattle and sheep. The problem is complicated by the metabolic interrelationship between molybdenum and copper. Detailed lists are given of areas in New Zealand and soil-types for which molybdenum should or should not be used. It is emphasized that molybdenum fertilizers correctly used are invaluable; irresponsibly used they are harmful.—P. H. HERBERT.

TUCKER, H. F. & SALMON, W. D. (1955). **Parakeratosis or zinc deficiency disease in the pig.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 613-616. [Authors' summary slightly modified.] **2954**

The parakeratosis syndrome was produced in pigs on rations containing 34 to 44 p.p.m. of zinc. The level of calcium and/or phosphorus affected the incidence and severity of the disease. Supplementing the diet with 0.02% of ZnCO_3 (or 0.01% ZnCO_3 in a trace mineral mixture) cured or prevented the disease. The zinc-supplemented rations produced excellent growth in pigs.

REPP, W. W., HALE, W. H., CHENG, E. W. & BURROUGHS, W. (1955). **The influence of oral administration of non-protein nitrogen feeding compounds upon blood ammonia and urea levels in lambs.**—*J. Anim. Sci.* **14**, 118-131. [Authors' summary modified.] **2955**

In a study of the toxicity for ewes of 10 non-protein nitrogen compounds, they were administered in progressively larger doses, and blood samples were afterwards examined at varying intervals to study the mechanism of poisoning. Ammonia and urea nitrogen were determined in 350 blood samples from 30 lambs after administration of urea, ammonium formate, ammonium acetate, ammonium propionate and propionamide. Limited observations were made on 15 lambs given ammonium succinate, formamide, guanidine carbonate, biuret and glycine. In all cases with the exception of guanidine carbonate, toxicity was associated with large increases in blood ammonia nitrogen, the critical level being about 1 mg. 100 ml. of blood. Administration of urea, ammonium formate, ammonium acetate and ammonium propionate at a level of about 40 g. urea equivalent resulted in fatal toxicity. Fatal toxicity was observed after administration of guanidine carbonate at the 30 g. urea equivalent level, but this was not associated with an increase in blood ammonia nitrogen. Little if any increase in blood ammonia and urea nitrogen was observed after the administration of the other compounds. Symptoms of fatal toxicity were alleviated by giving adequate amounts of acetic acid orally.

TUCKER, R. & MILLAR, R. (1954). **The patterns of nervous symptoms in the chondrodystrophic dog.**—*Brit. vet. J.* **110**, 359-365. [Authors' summary modified.] **2956**

Of 61 Pekinese dogs investigated to obtain data on the nervous symptoms in chondrodystrophic diathesis, 8 had major chondrodystrophic changes or nervous disorders or both, 7 being described in this paper.

More than half of the known and observed cases of nervous disorders and skeletal malformations outside the base of the skull were related to one another by breeding. It seems probable that certain forms of chondrodystrophia may run in families within breeds.

Retardation in closing of the sutures between the membranous bones of the skull of the Pekinese dog as reported by other authors for bulldogs and French bulldogs, was observed.

The pattern of chondrodystrophic nervous changes in Pekinese dogs is characterized by: (a) asymmetrical distribution of sensitive and hypersensitive areas; (c) asymmetry of reflexes; (d) correlation with areas of early calcification in the vertebral column of chondrodystrophic dogs.

The authors discussed the hypothesis that chondrodystrophia belongs at least partially to the diseases of calcium metabolism.

ENGFELDT, B. & ZETTERSTRÖM, R. (1955). **Biophysical studies of the bone tissue of dogs with experimental rickets.**—*Arch. Path.* **59**, 321-331. **2957**

Bone tissue changes in experimental rickets in dogs were investigated. Microradiographic examination of the newly formed osteoid tissue revealed that some deposition of mineral salts still took place though mineralization on the whole was greatly retarded. The collagen fibres were disposed in short, broad bundles instead of concentric layers; this involved an orientation of the apatite crystallites. The authors correlated the results of their studies with those of other workers.

—T. E. GATT RUTTER.

BIERI, J. G. (1955). **Effect of tocopherol on carotene conversion.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 482-484. [Author's summary copied *verbatim*.] **2958**

Increased amounts of tocopherol in tissues of rats did not affect the formation of vit. A from injected carotene, as determined by growth and tissue vit. A studies.

LEINATI, L., CORSICO, G. & BIANCARDI, G. (1954). **Vitaminosi da iperdosaggio "A" e "D₃" nel vitello. [Overdosage with vitamins A and D₃ in calves.]**—*Atti Soc. ital. Sci. vet.* **8**, pp. 502-505. [English and French summaries.] **2959**

Typical symptoms of excess vitamin D were observed in calves on one farm reared on whey and regularly and inadvertently given three times the therapeutic dose of a preparation containing vitamins A and D₃. Symptoms became noticeable when the calves reached the

age of 4 months: some died and others had to be slaughtered.—R.M.

QUAGLIO, G. (1954). **Calcificazioni multiple in cucciolo trattati con vit. D₂. [Multiple calcification in puppies treated with vitamin D₂.]** *Atti Soc. ital. Sci. vet.* **8**, pp. 566-570. [English and French summaries.] **2960**

A freshly weaned litter of 5 greyhound puppies was given food to which, at intervals of 10 days, 3 doses of an oily preparation each containing 500,000 I.U. vitamin D₂ and 30,000 I.U. vitamin A had been added. Three of the puppies died at the ages of 64, 69 and 120 days. P.M. examination revealed multiple calcification and histological examination revealed extensive deposition of calcium in most of the organs and tissues. Q. concluded that death was due to excess vitamin D₂.—R.M.

MUTH, O. H. (1955). **White muscle disease (myopathy) in lambs and calves. I. Occurrence and nature of the disease under Oregon conditions.**—*J. Amer. vet. med. Ass.* **126**, 355-361. [Author's summary modified.] **2961**

M. described white muscle disease as it occurs in Oregon in lambs and calves. The disease has been recognized in lambs and calves at birth as well as in older animals and constitutes a serious economic problem in some fertile irrigated areas. It occurs under conditions that, in the light of present knowledge must be considered as good feeding and management. Supplementation of the ration of ewes for 30 days prior to lambing with 150 mg. α -tocopherol acetate per head per day failed to prevent the disease. M. suggested that nutrition during the early part of gestation may have a bearing on the disease. The results of vitamin E therapy in affected animals were inconclusive.

NOBEL, T. A., BORNSTEIN, S. & SAMBERG, Y. (1954). **[Field cases of nutritional encephalomalacia in chicks during the summer 1953.]**—*Refuah vet.* **11**, 200-207. [In Hebrew. Abst. from English summary: p. 237.] **2962**

The authors described the clinical symptoms and the macroscopic and microscopic changes observed in an outbreak of encephalomalacia among chickens during the period, end of May to August, inclusive. The disease, which involved 17.8-23.5% of the birds in the flocks examined, appeared to be associated with a vitamin E deficiency but did not respond to vitamin E therapy. However, its spread

stopped when the diet was changed to ground grain and bran supplemented with suitable fresh green food when available.

—T. E. GATT RUTTER.

ATKINSON, R. L., FERGUSON, T. M., QUISENBERRY, J. H. & COUCH, J. R. (1955).

Vitamin E and reproduction in turkeys.—*J.*

Nutr. **55**, 387-397. 2963

The addition of 20 mg./lb. of food of α -tocopheryl acetate to an all vegetable protein diet increased hatchability of turkey eggs from 51.7% to 88% but had no effect on egg production or fertility. The tocopheryl content of egg yolks was much higher but there was no tocopherol in the egg whites. Where the diet was not supplemented with α -tocopheryl acetate embryo mortality was higher between the 24th and 28th days of incubation. These embryos were smaller than normal; they appeared blind and had a cloudy lens and/or a cloudy spot under the cornea.

The possibility of vitamin E deficiency in the field was reported.—T. E. GATT RUTTER.

KING, J. T., CHIUNG PUH LEE, Y. & VISSCHER, M. B. (1955). **Relationship between vitamin E and dietary minerals in mouse "paralysis"**.—*Proc. Soc. exp. Biol., N.Y.* **88**, 406-409. 2964

The authors reported experiments in which partial paralysis of the hind limbs was observed in mice on diets deficient in vitamin E and/or various mineral constituents. They concluded that further work was necessary to explain the mechanism of the effects.—A.S.

McDANIEL, E. G., HUNDLEY, J. M. & SEBRELL, W. H. (1955). **Niacin and anti-niacin activity of 3-acetylpyridine in dogs.**—*J. Nutr.* **55**, 623-637. [Authors' summary modified.] 2965

3-Acetylpyridine has been shown to have both niacin and anti-niacin activity. It is about one-sixth as active as niacin in increasing urinary excretion of N-methylnicotamide in normal dogs fed a stock diet. Twenty-five to 60 mg. of the drug daily protected dogs against black-tongue over long periods: daily doses of 25-60 mg. were sufficient to cure black-tongue.

GREGORY, M. E. & HOLDSWORTH, E. S. (1955).

The occurrence of a cyanocobalamin-binding protein in milk and the isolation of a cyanocobalamin-protein complex from sow's milk.—*Biochem. J.* **59**, 329-334. [Authors' summary modified.] 2966

An ultrafiltration method was used to demonstrate that the milk of different animal species has the property of combining with

added cyanocobalamin. The amount of the vitamin bound per ml. of milk was: pig, 0.24 μ g. rat, 0.13 μ g.; woman, 0.08 μ g.; goat, 0.0027 μ g.; and cow, 0.0005 μ g.

The whey proteins of each of the milk samples were separated by electrophoresis on paper and the position of the proteins on the paper compared with the position in which the cyanocobalamin occurred. In this way it was shown that the major proteins of the whey in the samples did not combine with the vitamin and that the cyanocobalamin-protein complex had the same mobility in the milk from each species tested.

JENKINS, K. J., BELL, J. M., O'NEIL, J. B. & SPINKS, J. W. T. (1954). **The effects of antibiotics on the synthesis of vitamin B₁₂ in the chick.**—*Canad. J. Biochem. Physiol.* **32**, 628-635. 2967

Chicks fed a supplement of cobalt alone made no better weight gains than controls fed no cobalt supplement; chicks fed cobalt plus an antibiotic made better weight gains than controls. Those in the latter group excreted less vitamin B₁₂ and more cobalt than those in the former group. Antibiotics had no marked effect on the concentration of vitamin B₁₂ except in the blood and in the gall bladder.—R. GWATKIN.

KANO, A. K., ANDERSON, J. A., HOUGHAM, D. F. & CHARKEY, L. W. (1954). **A possible role of iodinated casein in intestinal assimilation of vitamin B₁₂.**—*Proc. Soc. exp. Biol., N.Y.* **86**, 8-11. 2968

Chickens fed iodinated casein together with a diet containing a supplement of vitamin B₁₂ had a higher caecal content of the vitamin than controls not given iodinated casein; and in another group of chickens fed a diet without the vitamin supplement but with iodinated casein, the liver content of vitamin B₁₂ was lower than in controls not given iodinated casein. The authors suggested that iodinated casein interferes with intestinal absorption of vitamin B₁₂.
—F.E.W.

LUCKEY, T. D., PLEASANTS, J. R., & REYNIERS, J. A. (1955). **Germfree chicken nutrition. II. Vitamin interrelationships.**—*J. Nutr.* **55**, 105-118. [Authors' summary modified.] 2969

Germ-free and normally reared White Leghorn chicks were found to have similar metabolism of and qualitative requirements for individual B-vitamins. The deficiencies of thiamine, riboflavin, niacin and folic acid were apparently somewhat more acute in germ-free than in normally reared chicks. Excreta (as

measured from caecal and rectal contents) of deficient birds contain appreciable quantities of the vitamin which would save their lives if injected or given orally. The presence of these vitamins in excreta cannot be attributed to microbial synthesis in the germ-free birds.

It was found that germ-free chicks can recover spontaneously from a vitamin K deficiency.

PANTIĆ, V. & JOVANOVIĆ, M. (1955). [Histology of the thyroid in endemic goitre in domestic animals.]—*Acta Vet., Belgrade*. 5, 13-32. [In Serbian. Abst. from English summary.] 2970

See also absts. 2670 (low calcium diet and caprine TB.); 2693 (vitamins and resistance to fowl typhoid).

DISEASES, GENERAL

I, II, III & IV. GUILBRIDE, P. D. L. (1953). The importance of animal disease to public health in the Caribbean, with special reference to Jamaica. Part III. Virus infections. Part IV. Fungus infections, sylvatic plague and salmonellosis. Part V. Parasitic infection. Diseases caused by helminths and protozoa. External parasites and venomous animals common to man and animals. Part VI. Milk-borne diseases. Other zoonoses. General summary. Additions.—*W. Ind. med. J.* 2, 61-86; 135-152; 205-223 & 259-268. [For previous parts see *V.B.* 23, 2792.] 2971

I. G. discussed the incidence of rabies in the Caribbean region. Bat-transmitted rabies occurred in Trinidad, mainly amongst cattle. In Cuba the reservoir of rabies in dogs was the mongoose (*Mungus birmanicus*). Outbreaks of equine encephalomyelitis in Trinidad followed the importation of infected horses from Venezuela. In the Dominican Republic migrating birds may have been responsible for outbreaks of this disease. Although there are vast reservoirs of psittacosis in South America, and to a lesser extent in North America, there were very few cases of the disease in the Caribbean region. *Rickettsia burneti* infection is rare in this region.

II. Actinomycosis is common in animals, mainly cattle, in Jamaica and Puerto Rico, but it is uncommon elsewhere in the region. Ringworm in cats is common. Sylvatic plague has been reported only in Mexico, Venezuela, and Panama. The only species of salmonella which commonly occurred in animals were *S. pullorum* and *S. gallinarum* in fowls.

III. The following helminth parasites were common throughout the region: *Ascaris*

Goitre in domestic animals was investigated. The diffuse colloid type was commonest (especially in sheep and goats). The parenchymatous type was observed in horses, cattle and goats and isolated cases of nodular goitre (adenoma) were encountered in horses, cattle and sheep. Cystadenoma was found in a sheep. Pathological changes were noticed in the glands irrespective of whether these were enlarged, hypoplastic or normal in size and this was attributed to the high incidence of hypothyroidism in goitre areas. These changes affected the follicular structures, and included cyst formation and inflammatory processes.—T. E. GATT RUTTER.

lumbricoides, *Dipylidium caninum*, *Toxocara canis*, *T. cati*, and *Fasciola hepatica*. *Cysticercus cellulosae* occurred only in Puerto Rico, the American Virgin Islands, Haiti, and the Bahamas. *Trichinella spiralis* has been reported in the Bahamas. The commonest protozoan parasites in the Caribbean region are *Balantidium coli* in pigs, *Leishmania donovani* and *L. brasiliensis* in dogs and cats, and *Trypanosoma cruzi* in dogs, cats and some wild mammals. G. mentioned the occurrence in human beings, pigs, dogs, and cats in Mexico of *Tunga penetrans*, and of *Dermatobia hominis* throughout the region. He listed ticks and mites which were important as vectors of disease, and snakes and spiders known to bite human beings or animals.

IV. A brief account of the incidence in the Caribbean region of infection of human beings from animal sources with cow pox and the following bacteria: *Brucella*, streptococci, salmonellae, and *Erysipelothrix monocytogenes*. —R.M.

VAN ULSEN, F. W. (1954). Menginfecties bij kuikens van *Salmonella bareilly* met darm-parasieten. [Mixed infection with *S. bareilly* and intestinal parasites in fowls.]—*Tijdschr. Diergeneesk.* 79, 715-720. [English, French and German summaries.] 2972

An account of five outbreaks of mixed infection with *S. bareilly* and coccidiosis and/or capillaria in fowls aged 1-3 months. In the past 4 years, during which about 2,000 head of poultry were examined P.M., *S. bareilly* was isolated 100 times, *S. pullorum* once, and *S. typhi-murium* once. The author concluded that, in view of the prevalence of *S. bareilly* infection in the Netherlands, the intestinal con-

tents of all fowls submitted for P.M. examination should be examined for salmonella.

—C. A. VAN DORSSEN.

ANON. (1953). Myoglobinuria koni w świetle badań uczonych radzieckich. [**Soviet research on equine myohaemoglobinaemia.**] —*Méd. vét., Varsovie*, 9, 508-509. [In Polish.] **2973**

Various Soviet workers published their contributions on the aetiology of equine myohaemoglobinaemia.

Jerszow examined bacteriologically and serologically 84 dead horses; — He isolated streptococci from "quite a number" but was unable to demonstrate the presence of any filtrable virus.

Oniegow believed that deficiency of vitamins A, B and C plays a role.

From their biochemical studies several workers concluded that a very severe disturbance in metabolism of carbohydrates and fats takes place during the disease.

According to the Soviet workers a complete cure can be obtained by the administration of procaine penicillin. Prophylaxis, however, is more important, and here the important factor is apparently considered to be proper feeding of mares before service.—J. R. MITCHELL.

LOUGHLIN, D. (1954). **The disease complex of the bovine stomach.**—*Irish vet. J.* 8, 66-72. Discussion: pp. 72-74 & 107-110. **2974**

L. divided diseases of the bovine stomachs into two categories—primary, where the origin is the stomach itself, and secondary where the origin is elsewhere, e.g. acetonaemia and where atony of the stomach results. He described diagnosis and treatment of the different primary and secondary conditions, with particular attention to traumatic reticulitis. The opener of the discussion on this paper considered most gastric disturbances to be secondary rather than primary.—C. A. E. BRIGGS.

GALLINA B. (1954). La prova di Sulkowitch nella reticolo-peritonite traumatica dei bovini. [**The Sulkowitch test in traumatic reticulitis in cattle.**]—*Atti Soc. ital. Sci. vet.* 8, pp. 817-820. [English and French summaries.] **2975**

From an examination of urine from 30 cattle with traumatic reticulitis, G. concluded that the Sulkowitch test for calcium was of no value in the diagnosis of the disease.—R.M.

VACIRCA, G. (1954). Rilievi elettrocardiografici nella pericardite traumatica dei bovini. [**Electrocardiograms in traumatic**

pericarditis in cattle.]—*Atti Soc. ital. Sci. vet.* 8, pp. 813-815. [English and French summaries.] **2976**

The author described the electrocardiograms of 3 cows with traumatic pericarditis. The reception of electrical current from the heart was apparently hampered by the presence of pericardial hyperplasia and effusion.—R.M.

CUZZONI, C. (1954). "Diarrea" dei vitelli e ipercheratosi del rumine. [**Diarrhoea in calves associated with hyperkeratosis of the rumen.**]—*Atti Soc. ital. Sci. vet.* 8, pp. 586-588. [English and French summaries.] **2977**

Hyperkeratosis of the rumen was found to be associated with diarrhoea in new-born calves by Cohrs [*V.B.* 13, 400], who attributed this syndrome to vitamin A deficiency, *Bact. coli* playing the role of secondary invader.

The author examined 12 calves which died at the age of 4-10 days from diarrhoea, but did not find hyperkeratosis of the rumen. *Bact. coli* was isolated from most of the calves.—R.M.

GEORGIEV, R. (1952). **Bovine chronic haematuria.**—*Izv. Inst. eksp. vet. Med., Sofia*. 2, pp. 185-194. [In Bulgarian. Abst. from Russian summary.] **2978**

G. reported the results of work on bovine chronic haematuria at the Institute for Experimental Veterinary Medicine, Sofia.

Four forms of the disease occur: microhaematuria, acute, alternating or recurrent, and varicose. Early diagnosis can be made with the aid of a cystoscope. Haemorrhage occurs from minute reddened areas in the bladder. Examination of the ureters by catheterization failed to reveal kidney disease.

The anaemia is of a regenerative kind with a hyperchromic character. Leucopenia with eosinophilia was established; also slight neutrophilia and monocytosis.

The calcium level in the blood is normal and that of phosphorus a little low in some animals, but there is a marked increase in the silica content of the blood. More silica is excreted by affected animals than by healthy ones.

The degree of haematuria was determined from the serum albumin content of the urine.

Micro-haematuria was found in 40% of apparently healthy cattle.—F. A. ABBEY.

PRIOUZEAU, M. (1954). La broncho-pneumonie emphysemateuse des bovidés. [**Pulmonary emphysema with broncho-pneumonia in cattle.**]—*Rec. Méd. vét.* 130, 222-231. **2979**

An account of a broncho-pneumonia with pulmonary emphysema of cattle. The condition

usually starts in a chronic form without appreciable symptoms and suddenly assumes acute characteristics ending in death after a short course. The cause has not been ascertained, but P. suggested that it may primarily be pulmonary strongylosis, or plant poisoning by certain normally non-toxic Labiatae (peppermint, wild thyme) and wild or cultivated Cruciferae which are poisonous in certain circumstances. Prolonged feeding on dusty or mouldy fodder is also considered a possible cause.

—T. E. GATT RUTTER.

COLOMBO, S. & GERVASINI, C. (1954). Alterazioni delle masse muscolari nel bovino da trasporto in ferrovia. [**Lesions of the muscles of cattle following transportation by rail.**] —*Atti Soc. ital. Sci. vet.* **8**, pp. 580-583. [English and French summaries.] **2980**

The authors examined a number of cattle aged 18-30 months slaughtered at Milan after a rail journey from Hungary lasting several days. Some muscles or groups of muscles were increased in volume, and degenerative changes were characterized by patches of different colour, ranging from salmon pink to greyish-red. Histological examination revealed granular and hyaline degeneration, chiefly in those muscle fibres adjacent to connective tissue, with disappearance of striations. Some of the cattle, kept in a pen for a week before being slaughtered, did not regain normal gait, and degenerative changes, with chronic myositis, were present in some muscles.—R.M.

SERGEANT, E. (1953). De la "namoussia", maladie des agneaux du Présahara algérien attribuée par les indigènes à la piqûre de moustiques ("namous"). [**"Namoussia", a disease of lambs in the Sahara.**] [**Resembling swayback.**]—*Arch. Inst. Pasteur. Algér.* **31**, 251-279. **2981**

S. described a fatal disease prevalent among new-born autumn lambs in arid regions of the Sahara and characterized by paraplegia and blindness. According to local belief it is transmitted by mosquitoes. This has not been proved and the cause is still unknown. Copper deficiency seems to be closely associated with the condition which is very similar to swayback.

—T. E. GATT RUTTER.

SCHMID, G. (1955). Über die Beziehungen zwischen der Ödemkrankheit und der Dysenterie der Schweine. [**Relationship between oedema disease and dysentery in pigs.**]—*Schweiz. Arch. Tierheilk.* **97**, 1-16. [English, French and Italian summaries.] **2982**

S. considers *Vibrio coli* to be the secondary aetiological agent of oedema disease of pigs, infectious gastro-enteritis, chronic diarrhoea and piglet eczema, because it is regularly isolated from the intestinal mucosa and because anti-*V. coli* agents also have some beneficial effect in those conditions. He believes that the organism induces a decrease in B-vitamins which in turn causes the oedema and enteritis.

—W. G. SILLER.

FELGATE, C. A. G. (1955). The treatment of arthritis in pigs using swine erysipelas vaccine.—*Vec. Rec.* **67**, 183-184. **2983**

F. recorded eight cases of arthritis in pigs in which treatment with a swine erysipelas vaccine yielded good results.

—T. E. GATT RUTTER.

VON GLAHN, W. C., HALL, J. W., & SUN, S.-C. (1954). Arteritis in guinea-pigs, produced by emboli of cotton, resembling the arteritis of hypersensitivity.—*Amer. J. Path.* **30**, 1129-1139. [Authors' summary modified.] **2984**

When injected into the venous circulation of g. pigs, cotton fibres produced lesions in pulmonary arteries, arterioles, and precapillary branches at the sites where the fibres lodged. Foreign body granulomas formed around many of the cotton particles. There was necrosis of the media in arterioles and arteries after 12 hours; necrotic muscle was removed completely by large mononuclear cells within 48 hours. Necrosis of the media also occurred in vessels containing cotton around which no granuloma had formed. Lesions closely resembled the arteritis which occurs in hypersensitivity.

MONTEMAGNO, F. (1954). La prova dell'urobilinogeno quale test della funzionalità epatica in medicina veterinaria. [**The urobilinogen test as an indication of liver function in animals.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 667-671. [English and French summaries.] **2985**

M. used the following test for urobilinogen:—To 10 ml. urine was added 1 ml. of a reagent composed of paradimethylaminobenzaldehyde 4 parts, conc. hydrochloric acid 30 parts, water 40 parts. An intense red coloration, indicating the presence of an abnormal amount of urobilinogen, was described as a positive result. Out of 100 slaughter cattle, 67 had a normal liver and yielded a negative test result; 26 had disease of the liver (mostly helminth infestation) and yielded a positive result; 7 had a normal liver but were positive.—R.M.

POISONS AND POISONING

WAHLSTROM, R. C., KAMSTRA, L. D. & OLSON, O. E. (1955). **The effect of arsanilic acid and 3-nitro-4-hydroxyphenylarsonic acid on selenium poisoning in the pig.**—*J. Anim. Sci.* **14**, 105-110. [Authors' summary modified.] **2986**

Two experiments involving a total of 70 pigs were conducted to determine the effectiveness of arsanilic acid and 3-nitro-4-hydroxyphenylarsonic acid in counteracting the effects of chronic selenium poisoning in pigs. Excellent protection against up to 10 p.p.m. of selenite selenium was given by these two arsenicals at levels of 0.02% and 0.005% respectively. No toxic effects due to the arsenicals were observed at any time during either experiment.

GARLICK, N. L. (1955). **The teeth of the ox in clinical diagnosis. IV. Dental fluorosis.**—*Amer. J. vet. Res.* **16**, 38-44. **2987**

A general account of fluorosis as it affects the teeth of cattle, with 19 illustrations.—R.M.

I. TESINK, J. (1955). Fluorvergiftiging bij runderen en haar beïnvloeding door het toedienen van aluminiumsulfaat. [**Fluorine poisoning in cattle and its treatment with aluminium sulphate.**]—*Tijdschr. Diergeneesk.* **80**, 230-246. [English, French and German summaries and conclusions.] **2988**

II. TESINK J. (1955). De te nemen maatregelen bij chronische rundveefluorosis. [**Measures to be taken for the prevention of chronic fluorine poisoning in cattle.**]—*Ibid.* 299-308. [English, French and German summaries.] **2989**

I. Spontaneous fluorine poisoning of cattle was induced by grazing on fields polluted by atmospheric dispersal of fluorine by factory smoke. Experimental cases of fluorine poisoning were treated successfully with aluminium sulphate 5 mg. per kg. body wt., with an increase of 3 mg. weekly. Administration of aluminium-sulphate is advised as a preventive measure.

II. T. stated that it is inadvisable to breed or to raise young stock in areas polluted by the fluorine containing smoke of phosphate fertilizer factories. It is advisable to feed aluminium sulphate as a prophylactic measure.

—C. A. VAN DORSSSEN.

MUHLER, J. C. (1954). **Retention of fluorine in the skeleton of the rat receiving different levels of fluorine in the diet.**—*J. Nutr.* **54**, 481-490. [Author's summary copied verbatim.] **2990**

The storage of fluorine was determined in the femurs of rats fed three diets containing different amounts of naturally occurring dietary fluorine. On diets containing 3 p.p.m. of fluorine or less the concentration of fluorine decreased after about 75 days of age. Diets containing about 8 p.p.m. of fluorine appeared to permit the skeleton to acquire increasing concentrations of fluorine.

BUXTON, J. C. & ALLCROFT, R. (1955). **Industrial molybdenosis of grazing cattle.**—*Vet. Rec.* **67**, 273-276. **2991**

Severe diarrhoea with loss of condition in cattle was investigated by the authors, who considered that the cause was a "conditioned" copper deficiency brought about by contamination of the pasture with molybdenum compounds escaping with smoke and fumes from the chimneys of an adjacent metal alloy factory. The disorder was cured, and its recurrence prevented by the administration of copper sulphate to the cattle.—T. E. GATT RUTTER.

PARKER, W. H. & ROSE, T. H. (1955). **Molybdenum poisoning (teart) due to aerial contamination of pastures.**—*Vet. Rec.* **67**, 276-279. [Authors' summary modified.] **2992**

An account of an outbreak of a teart-like condition in cattle on four farms. The farms are to the north and east of three aluminium alloy factories; one of these was using molybdenum. Herbage analyses were made to confirm that the source of molybdenum was aerial contamination. Copper estimations on bovine blood samples yielded low figures; the cows had a craving for copper sulphate, the administration of which allayed the symptoms. In the later period of observations symptoms were not observed on the most vulnerable farms; the absence of symptoms was due to high copper contamination of the grazing. An account of zinc poisoning of plant life in proximity to one of the factories was also given.

STONER, H. B., BARNES, J. M. & DUFF, J. I. (1955). **Studies on the toxicity of alkyl tin compounds.**—*Brit. J. Pharmacol.* **10**, 16-25. [Authors' summary slightly modified.] **2993**

The biological effects of a series of tetra-, tri-, di- and mono- alkyl tin compounds, and of some other organic tin compounds, were studied in rats, rabbits, g. pigs and fowls. The di- and tri-ethyl tin compounds behaved differently; the toxic effects of only diethyl compounds were antagonized by dimercaprol.

In acute experiments on rabbits, triethyl tin, the most active compound, produced muscular weakness followed by a period of partial recovery, followed in turn by muscular tremors proceeding to convulsions and death. The other species and compounds showed variations of this pattern. The outstanding sign of chronic poisoning was muscular weakness.

Although there is no evidence that the tin is concentrated in any particular organ the main site of action of these alkyl compounds appears to be in the c.n.s. Since the delayed effects of triethyl tin poisoning are reproduced by large doses of sodium tin tartrate it is thought that the pharmacological relationship between the triethyl tin compounds and other forms of tin is similar to that between other metals (lead, mercury, antimony) and their alkyl derivatives. Because of their marked effect on the c.n.s. caution is advised in the handling of these compounds.

SCHOETTLE, C. E., REBER, E. F., MORRILL, C. C. & LINK, R. P. (1955). **Experimental production of hyperkeratosis in rats and hamsters.**—*Amer. J. vet. Res.* **16**, 183-188. **2994**

See also absts. 2684 (toxicity of penicillin); 3067 (doping of horses); 3073 (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

JAKSCH, W., LUNZER, J., RABL, F. R., STRÖMER, F. & GROSS, I. (1954). **Penicillin-Blutserumspiegelbestimmungen nach peroralen Gaben von Phenoxymethyl-Penicillin bei Pferd, Schwein, Hund und Huhn. [Penicillin concentration in the blood after the oral administration of phenoxymethyl penicillin to horses, pigs, dogs and fowls.]** *Wien. tierärztl. Mschr.* **41**, 687-708. [English, French and Italian summaries.] **2996**

Phenoxymethyl penicillin is acid-stable and is effective when given by mouth. The authors quoted the dosage for horses, pigs, dogs and fowls. They found that for horses the large dosage required rendered the drug uneconomical. Administration of the drug resulted in slight diarrhoea and the formation of a brown deposit on the tongue in some dogs.

—F. R. PAULSEN.

MÜLLER, (1954). **Über die Anwendung des Antihistaminicums Soventol in der Grosstierpraxis. [Use of the antihistaminic "soventol" (4-N-benzylanilino-1-methyl-piperidine) in large-animal practice.]** — *Prakt. Tierarzt.* No. 10, pp. 252-254 & 257. **2997**

A protein concentrate which had produced hyperkeratosis in cattle [see *V.B.* **25**, 195], and a chlorinated naphthalene preparation were fed separately to rats. Both preparations caused alopecia with mild hyperkeratosis, fatty degeneration of the liver, low levels of vitamin A in the liver, and reduction in growth rate, life span and size of the thymus gland. The same preparations were also fed to hamsters: they appeared to be less susceptible to the toxic action of these agents than rats. Hamsters fed chlorinated naphthalene and vitamin A lived longer than those fed chlorinated naphthalene and carotene.—R.M.

D'ASCANI, E. (1954). **Su di un caso di fotosensibilizzazione in un gregge, nel Lazio. [Photosensitization in a flock of sheep.]** — *Zooprofilassi.* **9**, 375-382. **2995**

More than half of a flock of 500 sheep developed an acute eruption of the eyelids, nose and lips. Most of the affected sheep recovered after confinement away from sunlight for a week. The author ascribed the condition to photosensitization, but was unable to determine the cause.

—G. P. MARSHALL.

A clinical account of the use of 4-N-benzylanilino-1-methylpiperidine in the treatment of eczema in cattle by topical application, and oedema of the lungs in pigs, laminitis in horses, and foot necrosis in cattle by parenteral injection.—F. R. PAULSEN.

DARRASPEN, E. & FLORIO, R. (1954). **La 5 phényl - 5 éthyl - hexahydropyrimidine - 4-6 dione dans le traitement de l'épilepsie du chien. [Treatment of epilepsy in dogs by 5 phenyl - 5 ethyl-hexahydropyrimidine - 4 - 6 dione.]**—*Rev. Méd. vét.* **105**, 801-811. **2998**

A clinical account of anticonvulsant therapy, using "mysoline," in 30 dogs subject to epileptic fits. The drug proved highly effective against both major and minor epileptic fits, when given *per os* in an initial dosage of 40-50 mg. per kg. per day in 3 divided doses, this being later reduced to 30-35 mg. per kg. per day. It was found that a dose of 65-75 mg. per kg. per day was liable to produce neurotoxic symptoms.—G. P. MARSHALL.

CRAWSHAW, H. A. (1955). **Surital sodium: a general anaesthetic for use in small animal**

surgery.—*Vet. Rec.* **67**, 266-268. [Author's summary modified.] **2999**

C. studied the action of surital sodium (sodium 5-allyl-5-(1-methylbutyl)-2-thiobarbituric acid), a short acting barbiturate anaesthetic, in 37 dogs and 8 cats. An average dose of 11 mg./lb., administered intravenously, gave good surgical anaesthesia in dogs, and 10-11 mg./lb. was suitable for cats.

The induction and recovery stages were quiet, and no deaths from respiratory failure occurred in 31 surgical cases.

Premedication with atropine sulphate was recommended to prevent excessive salivation.

HANSSON, C.-H. & EDLUND, H. (1954). Experimentella undersökningar och kliniska erfarenheter av succinylcholinjodid (celocurin) ur veterinärmedicinsk synpunkt. [Succinylcholine iodide in veterinary surgery. Experimental studies and clinical experiences.]—*Nord. VetMed.* **9**, 671-686. [In Swedish. English and German summaries.] **3000**

See also absts. 2687 (S. dublin infection); 2698 (formaldehyde fumigation and salmonella); 2715 and 2716 (L. canicola infection); 2721 (tetanus); 2729 (drugs added to semen diluents); 2733-2735 (foot rot); 2741 (antibiotics); 2754-2757 (trypanosomiasis); 2758-2759 (trichomoniasis); 2763 (blackhead); 2764-2765 (coccidiosis in fowls); 2788 (vaccinia in mice); 2848 & 2877 (phenothiazine); 2853-2856 (parasiticides); 2858 (demodectic mange); 2859 (malathion); 2881 & 2893 (piperazine); 2891-2895 (anthelmintics); 3067 (doping of horses); 3082 (book, antibiotics); 3083 (book, disinfectants and parasiticides).

Intravenous or intramuscular injection of succinylcholine iodide blocks striated muscles, resulting in muscular relaxation without affecting the heart or blood pressure. Combined with a general anaesthetic, it is indicated in intrathoracic surgery in dogs. In horses and cattle the drug facilitates casting, but when this is done in cattle, the oesophagus should be blocked by the introduction of an inflatable balloon to prevent aspiration of rumen contents.

—F. R. PAULSEN.

WILLE, H. (1954). Narkose mit Thiogenal beim Schwein. [Narcosis with "thiogenal" (sodium salt of methyl-thioethyl-2-pentyl-thiobarbituric acid) in pigs.]—*Dtsch. tierärztl. Wschr.* **6**, 385-388. **3001**

Narcosis in pigs resulting from the injection of a 10% solution of "thiogenal" produces only short after-sleep and no bad recovery-symptoms. Breakdown of the drug in the body is rapid; no toxic products result, nor effects on circulation or respiration. No fatal cases were observed, even with overdoses, nor was the meat tainted.

—F. R. PAULSEN.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

STACKPOLE, C. E. [Formerly Associate in Biology, Teachers College, Columbia University.]

LEAVELL, L. C. [Associate Professor in Nursing Education, Teachers College, Columbia University.] (1953). **Textbook of physiology. The activities of the living body.** pp. viii+418. New York (& London): The Macmillan Co. 35s. **3002**

This is a textbook which is intended to present the fundamental problems of physiology in such a way that the solving of these problems will not only interest the student in the fundamentals of physiology but will also stimulate him to bring problems of his own to the classroom. The subject matter is thus arranged into eight sections under such headings as Maintaining a balance between rest and exercise, work and play; Maintaining an awareness to the environment; Perpetuating the human race, etc.

This book may be recommended to the elementary student as the text is not overburdened with detail and it gives a satisfactory enough picture of the functioning of the living body.—J. A. NICHOLSON.

EVANS, C. LOVATT, & SMITH, D. F. G. (1955).

Observations on sweating in the horse.—*Porton Tech. Pap.* No. 481, pp. 19. [Mimeographed.] Porton, Wilts: Ministry of Supply, Directorate of Chemical Defence Research and Development, Chemical Defence Experimental Establishment. [Authors' summary slightly modified.] **3003**

l-Adrenaline injected i/v in doses from 0.25 mg. caused general sweating in horses. When injected i/d, the sweating began over the bleb, and then spread to its margins, finally tracking for long distances by lymphatic spread. The threshold dose was about 0.5 ml. of a 10⁻⁶ soln. It was not found possible to inhibit the sweating by adrenergic blocking agents.

l-nor-Adrenaline caused hair erection but no sweating; given i/d, there was tracking of the hair erection along the same tracks as were sweating tracks after adrenaline.

Acetyl choline or carbachol given i/d also caused sweating, which was blocked by atropine; thermal or exercise sweating is not blocked by atropine, so there is no evidence for a cholinergic innervation. The adrenaline content of the

plasma is increased by exercise by an amount comparable with that found after such small doses of adrenaline as cause free sweating. It is therefore considered that at least part of the normal sweating of the horse may be due to circulating adrenaline.

It is suggested that the anhidrosis seen in a proportion of horses in the tropics may be due to adrenal insufficiency.

DI DOMIZIO G. & PIERACCI, F. (1954). Il collagene nel muscolo bovino normale. [**Collagen in normal bovine muscle.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 496-498. [English and French summaries.] **3004**

The authors determined the collagen content of the muscular part of the diaphragm of 20 calves, 20 oxen, 20 bulls and 20 cows. The collagen content was lowest in calves and oxen, high in bulls, and highest in pregnant cows. They suggested that the increase during pregnancy was due to the action of somatotrophic hormone from the pituitary gland.—R.M.

RUPE, C. O. & FARMER, C. J. (1955). **Amino acid studies in the transformation of proteins of the hen's egg to tissue proteins during incubation.**—*J. biol. Chem.* **213**, 899-906. [Authors' summary modified.] **3005**

The authors studied the distribution of 14 amino-acids in the white, yolk, and embryo during the incubation of the hen's egg. Between the 72nd and 400th hours of incubation, all amino-acids accumulated in the embryo at the same rate. For the first 250 hours of incubation, the yolk was the sole source of amino-acids for the embryo. From the 250th until the 400th hour the white supplied the major portion of amino-acids needed by the embryo. With the exception of histidine and valine, which showed a slight decrease, the amounts of the several amino-acids in the egg remained constant throughout incubation.

AMBROSI, M., RONCALLI, R. & VALDINA, G. (1954). Attività istaminasica di alcuni organi di bovini sani. [**Histaminase activity in the organs of healthy cattle.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 412-414. [English and French summaries.] **3006**

The authors estimated the histaminase content of organs from 10 healthy cattle indirectly by determining the amount of histamine remaining after incubation for 4 hours with a tissue suspension of each organ. The following figures show the percentage of histamine inactivated:—Kidney, 60-68%; liver, 20-46%; lung, 20-40%; pancreas, 29-41%; spleen, 19-21%; thymus, 0-16%.—R.M.

FEIGELSON, P. & CONTE, F. P. (1954). **Studies on adaptive enzyme formation in mammals. I. Galactose metabolism.**—*J. biol. Chem.* **207**, 187-192. **3007**

In adult rats fed varying levels (10-20%) of dietary galactose no differences were demonstrable in the rate of galactose breakdown (whole animal or r.b.c.) after 4 weeks' feeding as compared with normal controls. The authors suggested that data presented as evidence for adaptive enzyme formation may often be interpreted as a non-specific increased protein synthesis response.—P. H. HERBERT.

BRUMBY, P. J. & HANCOCK, J. (1955). **The galactopoietic role of growth hormone in dairy cattle.**—*N. Z. J. Sci. Tech. Sect. A*, **36**, 417-436. [Authors' summary modified.] **3008**

Daily subcutaneous injections of growth hormone were administered to identical-twin cattle during (a) a 12-week period over the peak phase of lactation, and (b) a 4-week period at the latter end of lactation. In both trials a marked increase in milk and butterfat production resulted. The increased level of blood sugar was attributed to contamination of the product with a thyrotropic hormone. The raised milk and fat yield was accompanied by an apparent increase in the efficiency of production. The authors discussed the mechanism of the response, together with the role that growth hormone may play in lactation.

JORDAN, R. M. & SHAFFHAUSEN D. D. (1954). **Effect of somatotropin on milk yield of ewes.**—*J. Anim. Sci.* **13**, 706-710. **3009**

Each of six ewes about to go dry was injected i/m for 6 consecutive days with 25 mg. pituitary growth hormone. By the end of the course the milk yield and butter-fat were 40% higher than in untreated controls; the boosting effect lasted approximately one week. A trial done on 4 ewes in full milk yielded a boost of 22%.—F. L. M. DAWSON.

MOSIMANN, W. (1955). Vergrößerung der Kernvolumina in der Parathyreoidea und vermehrte Kalzium-Ausscheidung in der Milch bei Ziegen nach künstlicher Auslösung der Laktation durch Oestrogene. [**Increase in the volume of nuclei in the parathyroid glands, and increased calcium excretion in the milk, following artificial induction of lactation by oestrogens in goats.**]—*Schweiz. Arch. Tierheilk*, **97**, 178-187. [English, French and Italian summaries. English summary slightly modified.] **3010**

In female goats with artificially induced lactation by means of high doses of oestrogens the calcium secretion in the milk was increased and the nuclei in the parathyroid gland had a volume four times greater than normal. There are two possibilities of the mechanism of the influence of oestrogens on the nuclear volume: (a) indirect by primary effect on the diencephalon-hypophysis system, (b) direct disturbance of the mitotic cell division. In female rats with artificially induced development of the mammary glands the average nuclear volume in the parathyroid remained unchanged.

DODI, B. (1954). L'azione masteoplastica del 2 metil-1,4 naftochinone. [**Stimulating action of 2 methyl-1,4 naphthaquinone on the mammary glands of g. pigs.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 352-355. [English and French summaries.] **3011**

The vitamin K analogue, acetomenaphthone (acetylated methyl-naphthaquinone) appeared to stimulate the development of the mammary glands of ovariectomized g. pigs when given by i/m injection at a dosage of 4.5 mg. every 3rd day for 70 days.—R.M.

FERRINI, R. (1954). Contributo allo studio dell'esame citologico del secreto mammario nelle bovine. [**Cytology of cow's milk.**]—*Arch. Vet. Ital.* **5**, 209-214. [English, French, German and Spanish summaries.] **3012**

The average leucocyte formula of milk from clinically normal cows of different breeds was as follows: — Lymphocytes 27.5%; monocytes 18.5%; neutrophils 50%; eosinophils 3.5%; basophils nil; "lipophage" monocytes (monocytes containing fat droplets) 0.5%.

—F. R. PAULSEN.

GSELL, J. (Die Abhängigkeit der Sedimentierungsgeschwindigkeit der Erythrozyten vom Erythrozytenvolumen beim Pferdeblut und ihre Berücksichtigung in der Diagnostik. [**Relationship between sedimentation rate of erythrocytes and erythrocyte volume in the blood of horses.**]—*Schweiz. Arch. Tierheilk.* **96**, 189-210. [English, French and Italian summaries.] **3013**

G. found that the erythrocyte sedimentation rate in blood samples from horses is inversely proportional to the concentration of erythrocytes. He gave tables to calculate the former from the latter value. He observed that the erythrocyte sedimentation rate increased during the febrile stage of equine infectious anaemia. He mentioned various other important haematological ratios.—R. N. SMITH.

FALASCHINI, A. & BIONDO, G. (1954). Modificazioni protidemiche nella specie bovina in seguito al lavoro. [**Changes in the blood proteins of oxen following exercise.**]—*Atti Soc. ital. Sci. vet.* **8**, pp. 391-394. [English and French summaries.] **3014**

The authors examined by electrophoresis the blood of 8 oxen before and after heavy work lasting for 30, 60, 90 or 120 min.; they also determined the water and protein content. There was no relationship between changes in the composition of the blood after work and the duration of the work.—R.M.

HAFEZ, E. S. E. & ANWAR, A. (1954). Normal haematological values in the buffalo. [Correspondence.]—*Nature, Lond.* **174**, 611-612. **3015**

Blood from 20 healthy non-pregnant female *Bos bubalis* was examined in the spring of 1953: haematological values and plasma protein, non-protein nitrogen, sodium, calcium, phosphorus and blood sugar ranges were given.

—JOHN SEAMER.

BUSH, J. A., BERLIN, N. I., JENSEN, W. N., BRILL, A. B., CARTWRIGHT, G. E. & WINTROBE, M. M. (1955). Erythrocyte life span in growing swine as determined by glycine-2-¹⁴C.—*J. exp. Med.* **101**, 451-459. [Authors' summary modified.] **3016**

Red blood cell survival studies were performed on 5 normal growing pigs by following the specific activity of haemoglobin and haem after the administration of glycine-2-¹⁴C. The r.b.c. of these pigs appeared to be destroyed both by a random and an age-dependent process. Random destruction accounted for the larger portion of the cells destroyed.

The mean r.b.c. survival time was 62 days. This represents the interval time of incorporation of 50% of the maximal amount of labelling achieved to the time when the level had decreased once more to the 50% amount. The "corrected" average potential life span of the r.b.c. was 86±11.5 days. This figure was obtained by subtracting the number of days required to attain 80% of the maximal labelling from the average survival time of r.b.c. destroyed by an age-dependent process as distinguished from random destruction.

HUDSON, A. E. A. (1955). Fragility of erythrocytes in blood from swine of two age groups. —*Amer. J. vet. Res.* **16**, 120-122. [Authors' summary slightly modified.] **3017**

Fragility of the erythrocytes of blood from piglets less than 72 hours of age was greater

than in pigs aged 7 months. These comparative results in normal healthy pigs suggest that the haematological picture of the baby pig is in a transitory state. H. discussed the determination of erythrocyte fragility as a possible diagnostic measure in determining the cause of death in piglets.

GRUNSELL, C. S. (1955). **Seasonal variation in the blood and bone marrow of Scottish hill sheep.**—*J. comp. Path.* **65**, 93-107. 3018

In order to ascertain whether the fall in r.b.c. count in Scottish hill sheep in late winter and early spring results from inanition or from an increased worm burden at that time G. investigated the blood picture and bone marrow smears in worm-infested sheep, and in undernourished worm-free sheep. The r.b.c. count remained steady in the uninfested undernourished sheep, but fell in the infested sheep.

He discussed the possibility that worms interfere with the synthesis or absorption of a factor in the diet which is necessary for normal erythropoiesis.—A.S.

CRASS, G. & RIGDON, R. H. (1954). **Histologic study of the bone marrow in normal white Pekin ducks.**—*Arch. Path.* **58**, 159-167. [Authors' summary modified.] 3019

The differential cell count on the bone marrow of 50 normal ducks, from 3 to 90 days of age, is given. The marrow varied with age; there was an almost complete reversal in the erythroid-myeloid ratio in the young as compared with the older duck. Granules of the heterophile and eosinophile granulocytes changed their shape from round to oval and elliptical during the process of maturation. This change was not observed in the basophile series.

GELINEO, S. (1954). La température d'adaptation, la concentration de l'hémoglobine et la production de chaleur chez le chien. [**Heat regulation and haemoglobin content of the blood in the dog.**]—*C. R. Soc. Biol., Paris*. **148**, 1114-1116. 3020

G. measured heat production and haemoglobin concentration in 3 dogs at 3°C. and 25°C. following acclimatization for periods from 4-12 weeks to temperatures of -4° to +5°C., 25°C., and +5° to +10°. He concluded that the dogs reacted to cold conditions by an increase in haemoglobin concentration and heat production.

He compared these results with those of other workers who observed Husky dogs under arctic conditions.—A.S.

GRANT, W. C. (1955). **The influence of anoxia of lactating rats and mice on blood of their normal offspring.**—*Blood*, **10**, 334-340. [Interlingua summary.] [Author's summary slightly modified.] 3021

Lactating rats and mice 3 to 4 days *post partum* were discontinuously exposed daily to an ambient pressure of 300-400 mm. Hg for 6 hours while their litters remained at sea-level pressure. At the same time, control rats and mice were separated from their litters but kept at sea-level pressure. When the blood of baby rats was sampled at 10-25 days of age, the haematocrit, erythrocyte counts and O₂ capacity values of those suckled by anoxic mothers were greater than those suckled by the normal mothers. The total haemoglobin content of baby mice suckled by anoxic mothers generally exceeded those obtained from mice suckled by normal mothers. The evidence indicated that a substance is present in the milk of anoxic rats and mice which produces an increased haemoglobin content of the blood of their young.

BARTÍK, M., HAVASSY, I. & MARCANÍK, J. (1954). **Biochémia a fyziológia bielkovín krvných sér domácich zvierat. I. Elektroforetické frakcie krvných sér domácich zvierat—krvné séra koní.** [**Biochemistry and physiology of serum albumin in domestic animals. I. Electrophoretic fractions in horse serum.**]—*Vet. Čas.* **3**, 169-176. [In Slovak. German and Russian summaries. Abst. from German summary.] 3022

By use of low voltage (220 V) the authors separated 5 globulin fractions in the blood serum protein of horses.—A.S.

SIMPSON, A. M., EZROW, L. & SAPIRSTEIN, L. A. (1954). **Measurement of plasma volume with Rose Bengal (tetraiodo-tetrabrom-fluorescence).**—*Amer. J. Physiol.* **177**, 319-324. 3023

Rose Bengal was found to mix rapidly with the blood when injected into dogs and to be rapidly excreted, and suitable for repetitive plasma volume measurements in dogs.

—G. P. MARSHALL.

KUSACHI, R. & NISHIDA, T. (1945). [**Electrocardiographical study on exsanguination of horses.**]—*Vet. Res. Japan*, **1**, 179-190. [In Japanese. English summary.] 3024

The authors studied the electrocardiogram of serum horses during bleeding out from the left common carotid artery. A bipolar lead from two points on the skin in the long axis of the heart was used.—KOGI SAITO.

HURWITZ, A., CALABRESI, M., COOKE, R. W. & LIEBOW, A. A. (1954). **An experimental study of the venous collateral circulation of the lung. I. Anatomical observations.**—*Amer. J. Path.* **30**, 1085-1115. [Authors' summary modified.] 3025

The pulmonary veins of an entire lung of the dog can be ligated without producing haemorrhage and necrosis, provided that the animals are protected with antibiotics. This observation suggests a contribution of infection to what has formerly been considered merely infarction.

After ligation of the pulmonary veins there develops a collateral circulation capable of carrying up to at least 20% of the blood flow were the venous drainage intact, and the oxygen content of the vena azygos blood rises. In part, this collateral circulation depends upon the expansion of pre-existing bronchial venous channels, probably in response to mechanical factors, and, in part, upon the development of new channels of large size from the capillaries of granulation tissue within pleural adhesions. Some of these supplement the hilar bronchial veins, but others join the pulmonary veins, end to end, at the periphery. The factors guiding this junction are not known, but in their discovery may lie an important key to the mechanisms of collateral circulation in general. The arterial collateral circulation is not altered concomitantly.

DOUGHERTY, R. W., MEREDITH, C. D. & BARRETT, R. B. (1955). **Physiological effects of insufflation of the stomach of sheep.**—*Amer. J. vet. Res.* **16**, 79-90. [Authors' summary slightly modified.] 3026

Physiological effects of insufflation of the ruminant stomach were measured and recorded. Sheep with permanent rumen cannula fistulas were insufflated with O_2 , N_2 , CO_2 , and a mixture of CO_2 (60%) and CH_4 (40%).

Physiological differences occurred when different gases were used, and there were marked individual differences in tolerance to the same gas insufflated at the same pressures. Individual sheep varied in their physiological reactions when the gas and the pressures were constant.

Increased pressure within the rumen caused sharp rises in arterial (carotid) and venous (jugular) blood pressures. The arterial pressure dropped abruptly during eructation. Cerebrospinal fluid pressure increased during insufflation and dropped again when the pressure was released. Intra-pleural pressure varied under the influence of laboured breathing during insufflation. The only marked

variation was for an instant prior to eructation when the glottis was apparently closed. The transient intra-pleural pressure did not exceed 40 mm. of mercury.

Insufflation had a pronounced effect on blood gases. The changes were rapid and were influenced by the immediate pressures within the rumen. Even during a short insufflation period, they varied during and after eructation. Short insufflation periods decreased the pulmonary circulation time. Oxygen utilization decreased under the influence of insufflation.

CASONI, R. & BELLAFANTE, T. (1954). **Rapporti tra glicogeno e secrezione mucosa e caratteri del secreto nell'epitelio gastrico fetale di *Ovis aries*. [Glycogen in the gastric epithelium of the foetal sheep, and the nature of the gastric secretion.]—*Atti Soc. ital. Sci. vet.* **8**, pp. 421-423. [English and French summaries.] 3027**

By histochemical methods, the authors demonstrated that glycogen was present in the gastric epithelium of the foetal sheep throughout pregnancy. In addition, a non-chromotropic mucopolysaccharide, probably derived from glycogen, was present from the 10th-12th week, and a chromotropic polysaccharide, similar to that occurring in adult sheep, was present from the 13th week onwards. [See also *V.B.* **24**, 239].—R.M.

TURNER, A. W. & HODGETTS, V. E. (1955). **Buffer systems in the rumen of the sheep. I. pH and bicarbonate concentration in relationship to pCO_2 . II. Buffering properties in relationship to composition.**—*Aust. J. agric. Res.* **6**, 115-144. [Authors' summaries modified.] 3028

I. An account of experiments which emphasized the importance of avoiding loss of carbon dioxide when estimating the pH or bicarbonate concentration of ruminal fluid. The high partial pressure of carbon dioxide (pCO_2) of ruminal fluid is stressed; this may be 10 times or more as great as that of arterial blood. The relationship between pCO_2 , pH, and the bicarbonate ion concentration $[HCO_3^-]$ was examined in terms of the Henderson-Hasselbalch equation over a wide range of pCO_2 . From this, the pK_1 (the "practical" constant) of the carbonic acid system in four samples of ruminal fluid was determined as 6.21-6.28, mean 6.25.

The higher pH of saliva-free samples of ruminal fluid withdrawn by suction through a tube passed down the oesophagus, as compared

with that of the bulk fluid obtained through a ruminal fistula, is considered to be due to loss of CO_2 during collection. A better estimate of intraruminal pH is obtained, even when salivary contamination occurs, if such samples are equilibrated with a sample of the animal's ruminal gas, or, if this is not practicable, with an arbitrary gas mixture of high pCO_2 , e.g. 50% carbon dioxide and nitrogen.

II. Acid-base titration curves confirmed that ruminal fluid is relatively well buffered against addition of acid, but relatively poorly against addition of alkali. Considerable differences were observed between samples from different sheep. These were associated with differences in the interval after feeding, the nature of the diet, and the consumption of drinking water. They were correlated with differences in total and relative concentrations of bicarbonate, phosphate and volatile fatty acids (V.F.A.). Within the usual pH range of the rumen the important buffering components were bicarbonate and phosphate.

In the fasting rumen and in parotid saliva, bicarbonate was more important than phosphate. As ruminal fermentation proceeded and as V.F.A. accumulated, bicarbonate and pH decreased and the buffer value depended more and more upon phosphate. In actively fermenting rumens, in which V.F.A. concentration was high and the pH less than 6, V.F.A. contributed significantly to the buffer resistance against further additions of acid.

MATOUŠEK, J. (1954). Štitná žláza červenostrakatého skotu během ontogeneze. [The thyroid gland of cattle.] — *Ann. Acad. tchécosl. Agric.* 27, 251-266. [English and Russian summaries.] 3029

M. described the histology and physiology of the thyroid gland in cattle from embryonic life to old age. Thyroid glands of females were relatively heavier than those of males. Thyroid activity was most intensive in the period between birth and sexual maturity. Follicle size increased with old age. The chemical character of the colloid was examined by a differential staining method described by Krause. During the last few weeks of foetal life the colloid in histological sections was fuch-

sinophilic and after sexual maturity it was tanninophilic.—E.G.

POSTIGLIONI GRIMALDI, J. (1954). Ausencia del ligamento redondo de la articulación coxo-femoral del caballo. Referencias sobre la significación morfológica del ligamento redondo. [Absence of the round ligament in the hip joint of the horse.] — *An. Fac. Vet. Montevideo* 6, No. 2, pp. 119-126. [English, French and German conclusions.] 3030

The author reported absence of the ligamentum teres femoris, and of the l. accessorium femoris, respectively, in two horses.

—F. R. PAULSEN.

SMITH, R. N. (1955). The arrangement of the ansa spiralis of the sheep colon.—*J. Anat., Lond.* 89, 246-249. [Author's summary modified.] 3031

S. described briefly the lower alimentary tract of the sheep with special reference to the colon primum (homologous with the ascending colon of man). An analysis of the arrangement of the ansa spiralis of the colon of 1,601 sheep revealed that in 842 there was a regular spiral. Irregularities ranged from small S-shaped insertions in otherwise normal coils to complete departures from the spiral arrangement. The commonest pattern of the ansa spiralis was 3 centripetal and $3\frac{1}{2}$ centrifugal coils and this arrangement was found in 49% of all specimens examined.

—(1953). Biological transformations of starch and cellulose. A Symposium held at The London School of Hygiene and Tropical Medicine on 21 February, 1953. [Organized and edited by: WILLIAMS, R. T.] pp. 84. Cambridge: At the University Press. Biochemical Society Symposia No. 11. 10s. 6d. 3032

This is a record of the results of biochemical investigations of starch and cellulose, the synthesis and breakdown of the former, the chemistry and degradation of the latter and the part played by cellulases. A contribution of direct veterinary interest is a paper by A. T. Phillipson entitled "Digestion of cellulose by ruminants."—T. E. GATT RUTTER.

See also absts. 2759 (intestinal flora of pigs); 3084 (book, morphology of blood in laboratory animals); 3085 (book, blood groups); 3086 (book, developmental physiology); 3087 (book, avian physiology); 3088 (book, sheep anatomy); 3089 (book, anatomy).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

FUHRMANN, H. (1954). Beitrag zur Bestimmung und Beurteilung des Ausblutungs- und Säuregrades der Muskulatur notgeschlachteter Tiere. [Determination of the extent of

bleeding and the acidity of the musculature of emergency-slaughtered animals.] — *Schweiz. Arch. Tierheilk.* 96, 351-363. [English, French and Italian summaries.] 3033

F. examined 937 samples of muscle from 127 emergency and casualty slaughtered animals. The extent of bleeding was determined by a colorimetric test for haemoglobin in aqueous extract of muscle. The pH of muscle 24 hours after slaughter was determined with the aid of nitrazine yellow indicator. Detailed results for 33 of the animals are given. F. concluded that, in the judgment of emergency slaughtered carcasses, the type of disease and general condition of the carcass must be taken into account in addition to the two tests described.—R.M.

HENRY, P. & McNEIL, R. W. (1955). **Bruising of cattle in transit from Central Australia, to Adelaide.**—*J. Dep. Agric. S. Aust.* **58**, 228-233. **3034**

A study of the nature and extent of bruising of cattle, resulting from a 960 mile rail trip, revealed that losses from this source were of small economic importance.

—R. I. SOMMERVILLE.

RZÓSKA, J. (1953). **Bait shyness, a study in rat behaviour.**—*Brit. J. anim. Behav.* **1**, 128-135. **3035**

See also absts. 2686 (S. dublin infection in calves from water contaminated with sewage); 2827 (R. burneti from milk); 3850 (blowflies in slaughter houses); 2971 (animal diseases and public health in Jamaica); 3069 (wild dogs and dingoes in Australia).

REPRODUCTION AND REPRODUCTIVE DISORDERS

BISHOP, M. W. H. & SALISBURY, G. W. (1955). **Effect of sperm concentration on the oxygen uptake of bull semen.**—*Amer. J. Physiol.* **180**, 107-112. **3037**

The authors measured the oxygen uptake of standard samples of bovine spermatozoa in various amounts of seminal fluid, and found that the oxygen uptake was inversely related to the concentration of the spermatozoa. This could be explained by assuming that the spermatozoa secreted a substance which inhibited their own metabolism.

Oxygen uptake was directly related to pH.

Spermatozoan motility was depressed during the course of the experiment, but recovered when sodium chloride solution was added.—A.S.

SCHINDLER, H. (1954). **[Viability of bull spermatozoa after freezing and storage at -79°C.]**—*Refuah vet.* **11**, 192-195. [In Hebrew. English summary: p. 245, slightly modified.] **3038**

The viability of bull spermatozoa in cold storage was investigated. The best results were

The role of the food base in the development of bait shyness in rats is considerable. Associated unpleasant experiences play a part. In two tests made on bait-shy rats, all accepted a new poison in a different food base. Great individual variation is noticeable. R. discussed the application of behaviour studies to rodent control.—W. S. MARSHALL.

PUGH, L. P. (1955). **Veterinary clinical studies at Cambridge. Inaugural lecture.** pp. 26. Cambridge: University Press. 2s. 6d. **3036**

P. explained the objects of clinical studies and of the teaching of veterinary medicine at universities. He considered that the subject should be regarded as an analytical process—a science rather than an art—and the tendency on the part of clinicians to resort to empirical methods should give way to a more scientific approach. He referred to the ever widening field of interest of veterinary medicine and to the necessity for close co-operation with cognate sciences—pathology, physiology, biochemistry, etc. — and expressed the view that veterinary science should develop its own branch of experimental medicine.—T. E. GATT RUTTER.

obtained with 8% glycerol in the diluted semen and an equilibration time of 5 hours. Revival rate was approx. 60% under these conditions. The proportion of motile spermatozoa did not decrease during 40 days' storage at -79°C.

—T. E. GATT RUTTER.

SHERMAN, J. K. (1955). **Temperature shock in human spermatozoa.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 6-7. **3039**

As a result of experiments S. considered that human spermatozoa are not susceptible to temperature shock; death of spermatozoa, when it occurred on exposure of semen to extremely low temperatures, was associated with ice formation. Rewarming above freezing temperature produced no deleterious effects, and death during thawing was also associated with ice formation. The possible role of glycerol in temperature shock was discussed.

—T. E. GATT RUTTER.

BONADONNA, T. & POZZI, G. C. (1955). **Osservazioni sull'azione del fattore luce nei riguardi della produzione spermatica nel**

Gallus gallus. [Observations on the action of light on semen production in the fowl.]—*Zootec. e Vet.* 10, 44-61. [English summary.] 3040

The authors maintained for 70-90 days 2 cockerels in complete darkness, 2 in continuous artificial light, and 2 under normal conditions. Birds of the first two groups showed loss of body wt. and reduction in the volume of semen obtained once weekly by massage, amounting to 40% in those kept in the dark and 30% in those kept in continuous light. In the birds kept in the dark there was a greater incidence of abnormal spermatozoa, reduction in the weight and volume of the testicles, and reduced spermatogenesis.—R.M.

YAO, T. S. & EATON, O. N. (1954). Postnatal growth and histological development of reproductive organs in male goats.—*Amer. J. Anat.* 95, 401-431. 3041

On the basis of histological changes in the reproductive organs, sexual maturation in male goats shows four stages: young stage from birth to 80 days; developing stage from 80 to 114 days; growing stage from 114 to 150 days; mature stage 150 days and older. Spermatozoa appear at the age of 92 days, and the process of spermatogenesis takes approx. 22 days. Bucks should be separated from does in a flock at the age of about 80 days. A buck at 100 days may be used for artificial insemination.

—W. R. BETT.

DEMPSEY, E. W., WISLOCKI, G. B. & AMOROSO, E. C. (1955). Electron microscopy of the pig's placenta, with especial reference to the cell-membranes of the endometrium and chorion.—*Amer. J. Anat.* 96, 65-101. [11 plates.] 3042

Electron-microscopic study of the pig's placenta reveals a correlation between activity of each cell type and individual cyto-architecture. Particularly the structure of the plasma membranes at the free surfaces of the cells of the uterine glands and chorionic areolae and of the apposed surfaces of the maternal and foetal epithelia of the chorionic ridges and fossae can be correlated with secretory and absorptive functions. Iron transmission through the placenta is correlated with dense material in the uterine glandular epithelium and in the absorptive cells of the chorionic areolae.

—W. R. BETT.

AUSTIN, C. R. & BRADEN, A. W. H. (1954). Anomalies in rat, mouse and rabbit eggs.—*Aust. J. biol. Sci.* 7, 537-542. 3043

The authors described some of the rarer anomalies in rat, mouse and rabbit eggs, including "giant" eggs of about twice the normal volume, primary oocytes, eggs containing a single pronucleus or a male and two female pronuclei, and 2-cell eggs with a binucleate blastomere. They discussed the occurrence of these eggs.—A. W. BLACKSHAW.

BRADEN, A. W. H. & AUSTIN, C. R. (1954). Fertilization of the mouse egg and the effect of delayed coitus and of hot shock treatment. *Aust. J. biol. Sci.* 7, 552-565. 3044

The mean number of eggs in the fallopian tubes of mice 3-15 hours after ovulation was 8.1. In mice kept under controlled illumination (light from 3 p.m. to 5 a.m., dark from 5 a.m. to 3 p.m.), the average period between the ovulation and spermatozoan penetration of an egg was about 5 hours, and the time between penetration and the formation of pronuclei about 3-3½ hours.

In mice mated after ovulation, penetration of the eggs began about one hour after coitus and was complete in 6 hours. "Capacitation" of mouse spermatozoa before penetration of the egg is either unnecessary or the period is short.

Hot shock (immersion of the oviducts in water at 43° to 45°C.) increased the incidence of eggs exhibiting suppression of the second polar body and of those with polyspermy. The occurrence of triploidy in mouse embryos is considered to be due usually to the first phenomenon and only occasionally through polyspermic fertilization.—A. W. BLACKSHAW.

KUPPERMAN, H. S., ARONSON, S. G., GAGLIANI, J., PARSONNET, M., ROBERTS, M., SILVER, B. & POSTIGLIONE, R. (1954). The value of various laboratory procedures in the comparative study of the duration of action of androgens.—*Acta endocr., Copenhagen.* 16, 101-117. [In English. Authors' summary slightly modified.] 3045

The authors studied the effectiveness and duration of action of various androgenic steroids. An attempt was made to quantitate the results, using three different methods: namely, measurement of the urinary 17-ketosteroid excretion in human beings, determination of gonadotrophic-inhibiting action in parabiotic rats, and measurement of the growth-promoting effect upon the seminal vesicles and prostate glands of castrated male rats. In several instances, the growth-promoting effect of the androgens upon the levator ani muscle in the castrated rat was also studied. It was concluded

that an increase in urinary 17-ketosteroid excretion could not be considered a reliable measure of androgenic activity since certain oral preparations, ineffective clinically, resulted in a marked increase in 17-ketosteroid excretion while other substances with known androgenic properties either increased 17-ketosteroid excretion very little or actually depressed it. The determination of the quantitative effectiveness of androgens by their gonadotrophic-inhibiting action in parabiotic rats, and growth-stimulating effect upon the levator ani muscle in the castrated rat did not prove satisfactory since quantitation of effect with different dose levels could not be attained. Measurement of the growth-promoting effect of the steroids upon the male accessory glands proved to be an acceptable method for quantitating the effectiveness of various androgens. Both testosterone cyclopentylpropionate and testosterone phenylacetate proved to be the most active preparations with regard to effectiveness (weight increase) and duration of action. The remaining compounds tested are listed in order of decreasing activity: testosterone isobutyrate, testosterone as an aqueous phosphate suspension, testosterone propionate as an aqueous suspension, testosterone as an aqueous suspension, testosterone propionate in oil, and the least active preparation, testosterone in oil.

SCARFÒ, G. (1954). Estrogeni sintetici ed ergonovina nel trattamento della ritenzione placentare delle bovine. [**Oestrogens in treatment of retained placenta in cows.**—*Gazz. Vet., Milano*, No. 4, pp. 1-9. **3046**

S. employed a preparation containing 4 mg. ergometrine and 10 mg. stilboestrol dipropionate in 10 ml. soln. in the treatment of retained placenta in 32 cows and pyometra in 6 cows. The drug was administered by i/m injection, and delivery of the placenta occurred after one or two injections. In some of the cows manual removal had already been tried without success; in others it became easily possible after administration of the drug.—F. L. M. DAWSON.

AJELLO, P. & LOMBARDO, N. (1955). L'influenza delle sostanze gonadotrope sulla ovulazione della capra siciliana. [**The influence of gonadotrophins on ovulation of Sicilian goats.**—*Zootec. e Vet.* **10**, 2-12. [English summary.] **3047**

The i/m injection of 500 i.u. either of follicle stimulating hormone or of luteinizing hormone readily induced oestral symptoms in goats after a time-lag of irregular length, at any season of the year. Single and multiple

ovulations were obtained, and higher doses did not produce more ova. A total number of 41 goats was used in this work.—F. L. M. DAWSON.

KIDDER, H. E., CASIDA, L. E. & GRUMMER, R. H. (1955). **Some effects of estrogen injections on the estrual cycle of gilts.**—*J. Anim. Sci.* **14**, 470-474. [Authors' summary modified.] **3048**

The authors described an experiment in which 10 gilts were given intramuscular injections of 3 mg. of diethylstilboestrol in maize oil on the 6th, 11th, or 16th day of the oestrous cycle. Injections on the 11th day lengthened the oestrous cycle significantly, apparently as a result of luteinization of follicles, while injections on the 16th day were variable in effect but frequently produced a significant shortening of the cycle. Injections on the 6th day had no apparent effect. The average lengths of the cycles were 20, 26 and 18 days following injections made on the 6th, 11th and 16th days respectively.

BIGGERS, J. D. & CLARINGBOLD, P. J. (1954).

Criteria of the vaginal response to oestrogens.—*J. Endocrin.* **11**, 277-284. **3049**

Four groups each of about 130 ovariectomized mice were injected with 0.3-13.1 $\times 10^{-4}$ μ g. oestradiol, either i/v or s/c, in equal instalments 24 hours apart. The authors claimed that the method of discriminant analysis employed embodies a great advance in the interpretation of this assay. On such a basis they showed that the response is of the "all-or-nothing" type, and that pro-oestrous smears should be classified as positive, the presence or absence of leucocytes providing the best criterion.—F. L. M. DAWSON.

HOSODA, T., KANEKO, T., MOGI, K. & ABE, T. (1955). **Effect of gonadotropic hormone on ovarian follicles and serum vitellin of fasting hens.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 502-504. **3050**

Daily administration of 0.5 Cartland-Nelson unit of gonadotropic hormone to fasting hens prevented atresia of the ovarian follicles and diminution of serum vitellin.

—T. E. GATT RUTTER.

CORRIAS, A. (1954). Aspetti della sterilità bovina in Liguria. II. Patologia genitale da carenze alimentari. Etiologia, forma clinica, trattamento. [**Influence of nutritional deficiencies on bovine sterility.**—*Vet. Ital.* **5**, 1079-1100. [English, French and German summaries.] **3051**

Animal husbandry in the area is generally poor. Cows calve on the average every 20 months and milk 350 gal. per annum. Locally grown hay is apt to be deficient in carotene, calcium, phosphorus, and protein. Anoestrus, suboestrus, and early foetal death are common, and it is claimed that heavy doses of vitamin A give good therapeutic results. Further soil and forage analysis is urged.—F. L. M. DAWSON.

PAHNISH, O. F., STANLEY, E. B. & SAFLEY, C. E. (1955). **The inheritance of a dwarf anomaly in beef cattle.**—*J. Anim. Sci.* **14**, 200-207. [Abst. from authors' summary.] **3052**

See also absts. 2669 (oestrogens and uterine TB.); 2684 (effect of penicillin on pregnant animals); 2690-2711 (brucellosis); 2714 (L. pomona as cause of porcine abortion and neonatal mortality); 2729-2730 (antibacterial additives to semen diluents); 2745 pleuropneumonia-like organisms in bull semen); 2749 (bacteriology of bovine cervix); 2758-2762 (trichomoniasis); 2769 (sterility from anaplasmosis in a bull); 2801 (ovine enzootic abortion); 2922 (abortion in cattle from fish meal); 2923 (sterility from faulty nutrition); 2928 (effect of aureomycin); 2931 (effect of terramycin and streptomycin); 3091 (conference on gestation).

ZOOTEC HNY

BIANCA, W. (1955). **The effect of thermal stress on the acid-base balance of the Ayrshire calf.**—*J. agric. Sci.* **45**, 428-430. **3054**

B. subjected two 4-month-old Ayrshire calves to a temp. of 35°C. and absolute humidity of 34 mg./litre in a "climatic room." He observed an increase in respiration rate, a decrease in CO₂ tension and in the CO₂-combining capacity of the venous plasma; an increase in the lactic acid concentration of the venous blood, and an increase in the pH of the urine. The pH of the venous plasma increased slightly. He concluded that the thermal panting which occurred under these conditions caused a CO₂ deficit which was compensated by the excretion of alkali by the kidneys. He considered that this compensation was not substantially affected by the production of lactic acid resulting from an increased activity of the respiratory muscles.—A.S.

I. KIBLER, H. H. & BRODY, S. (1950). **Environmental physiology: with special reference to domestic animals. XI. Effects of temperature, 50° to 150°F and 50° to 9°F on heat production and cardiorespiratory activities in Brahman, Jersey and Holstein cows.**—*Res. Bull. Mo. agric. Exp. Sta.* Bull No. 464. pp. 18. **3055**

II. KIBLER, H. H. & BRODY, S. (1952). **Environmental physiology: with special reference to domestic animals. XIX. Relative efficiency of surface evaporative respiratory evaporative, and non-evaporative cooling in relation to heat production in Jersey, Holstein, Brown Swiss and Brahman cattle, 5° to 105°F.**—*Ibid.* Bull. No. 497. pp. 31. **3056**

The authors studied the inheritance of dwarfism in Hereford cattle. They described 4 breeding experiments the results of which indicated that the dwarfism was attributable to an autosomal recessive gene with complete penetrance.

FREY, I. (1954). **Beitrag zur Prostatahypertrophie des Hundes. [Hypertrophy of the prostate in dogs.]**—*Tierärztl. Umsch.* **9**, 297-304. **3053**

F. compared hypertrophy of the prostate gland in dogs and in man, and discussed treatment of the condition.—A.S.

III. THOMPSON, H. J. (1954). **Environmental physiology and shelter engineering: with special reference to domestic animals. XXIV. Effect of temperature upon heat exchanges in dairy barns.**—*Ibid.* Bull No. 542. pp. 28. **3057**

IV. BRODY, S., RAGSDALE, A. C., THOMPSON, H. J. & WORSTELL, D. M. (1954). **Environmental physiology and shelter engineering: with special reference to domestic animals. XXV. The effect of wind on milk production, feed and water consumption and body weight in dairy cattle.**—*Ibid.* Bull No. 545. pp. 20. **3058**

V. THOMPSON, H. J., YECK, R. G., WORSTELL, D. M. & BRODY, S. (1954). **Environmental physiology and shelter engineering: with special reference to dairy cattle. XXVI. The effect of wind on evaporative cooling and surface temperature in dairy cattle.**—*Ibid.* Bull No. 548. pp. 27. **3059**

VI. KIBLER, H. H. & BRODY, S. (1954). **Environmental physiology: with special reference to domestic animals. XXVII. Influence of wind on heat exchange and body temperature regulation in Jersey, Holstein, Brown Swiss and Brahman cattle.**—*Ibid.* Bull No. 552. pp. 39. **3060**

VII. BRODY, S., RAGSDALE, A. C., THOMPSON, H. J. & WORSTELL, D. M. (1954). **Environmental physiology and shelter engineering: with special reference to domestic animals. XXVIII. The thermal effects of radiation intensity (Light) on milk production, feed and water consumption, and body weight in Holstein, Jersey and Brahman cows at air temperatures 45°, 70° and 80°.**—*Ibid.*

Bull No. 566, pp. 20. [Authors' summaries slightly modified. For other parts in this series, see *V.B.* 20, 2400, 2727; 21, 539, 540, 2387; 22, 1896-1898; 23, 2082; 24, 942, 3690; 25, 1826.] **3061**

I. Data are presented on the influence of increasing temp., 50° up to 105°F., and of decreasing temp. 50° down to 9°F., on heat production and cardiorespiratory activities in zebu, Jersey and Holstein cows. The results confirm previous reports on European-evolved Jersey and Holstein cows that increasing environmental temp. above the critical level, 70° to 80°F., increases rectal temp. and respiration rate, and decreases heat production and pulse rate; and demonstrate for the first time that the critical level in Indian-evolved zebu cows is not 70° to 80°F., but 90° to 95°F. The greater heat tolerance of the zebu cows above 70° to 80°F. does not appear to be associated so much with greater sweating rate per unit surface area, since they developed almost as high rectal temperatures at 105°F. environmental temp. as Jersey cows of similar body wt., as with their greater surface area per unit wt. with resulting greater heat dissipation below 95°F. by convection, radiation and vaporization from their larger surface. The lower heat production of these zebu cows — associated perhaps with their lower milk production and feed consumption, and possibly with an inherently lower basal metabolism—may also be a factor in their greater heat tolerance.

Decreasing the temp. from 50° to 9°F. did not affect the rectal temp.; decreased the respiration rate more in the Holstein and Jersey than in the zebu cows; and increased the heat production more in the zebu than in the Jersey and Holstein cows.

Numerical details are given in the text and tables

II. Data are presented on the influence of temp., 5° to 105°F., on the levels and proportions of heat and moisture dissipation by evaporative cooling from the outer body surface and respiratory tract in lactating Jersey, Holstein, Brown Swiss, and zebu cows; and in non-lactating zebu cows and Brown Swiss and zebu heifers. All breeds attained max. outer surface evaporative or "sweating" rates of 150 g./sq.m./hour or 87 Cal/sq.m./hour, but the rise to max. levels occurred at lower temperatures in the European than in the zebu cows. The European cows and heifers attained max. respiratory vaporization rates of 50 g./sq.m./hour or 29 Cal/sq.m./hour; the corresponding rate for the zebu cows and heifers

being about 30 g./sq.m./hour or 17 Cal/sq.m. hour. The percentage of metabolic heat dissipated by outer surface vaporization varied with temp. but was very similar for all these breeds; the percentage of metabolic heat dissipated by respiratory vaporization, which also varied with temp., was higher for European than zebu cattle. There was no evidence that zebu cattle "sweat" more per unit surface area than European cattle, but their 12% greater surface area per unit wt. gives them an advantage in outer evaporative and non-evaporative cooling (limited to the range, 60° to about 150°F.) and a corresponding disadvantage in heat conservation below 40°F.

III. This report summarizes heat and moisture exchange data relative to ventilation for the initial "temperature-effect" studies. A fairly detailed description is given of the animal shelter laboratory, its instrumentation and method of use.

Test room total heat values reported were calculated by adjusting for extraneous sources. Extraneous heat sources are lights, structural condition, and temperature differences between water, feed and bedding added, and milk and litter removed from the test rooms. Therefore, total heat values reported come primarily from the sum of animal sensible and latent heats. Such values are from 10 to 20% higher than metabolic total heat measurements on these same animals. Vaporized moisture values reported include vaporization from test room surfaces as well as vaporization from animals.

With temp. declining from 80°F. to 10°F. total heat production increases about 20%. Moisture production decreases with decreasing temperatures in this same temp. range. These facts suggest that from a winter ventilation standpoint there is an advantage in a relatively low stable air temp.

At a constant barn temp. of 50° for the 24-hour day, the max. heat production (which occurs after the evening feeding) is about 18% higher than the minimum heat production (during the morning hours).

IV. Although changing the rate of air movement affected some of the physiological reactions, as will be reported in two subsequent publications, the European-evolved cows adjusted themselves so that no appreciable effect of air movement was observed on milk production, water consumption or body wt. at environmental temperatures 18°, 50°, 65° and 80°. While the feed consumption data do not show it directly, indirect evidence given in the text suggests that increasing air velocity

at 18°F. increases feed consumption as well as heat production.

At 95°F. milk production and feed consumption in the large, high producing Holsteins and Brown Swiss were more depressed at low than at high air velocity. The reactions of the lactating Jerseys at 95°F. were uncertain as the two cows reacted in opposite ways. The dry zebu and Jersey cows showed no significant differences.

V. Data in tabular and graphic forms are presented on the effects of low, medium, and high air velocities (0.4, 4 to 6 and 8 to 9 miles per hour) at 18°, 50°, 65°, 80°, and 95°F. on total evaporative cooling (and insensible wt. loss) and on surface temp. (hair and skin) of lactating Brown Swiss, Holstein, Jersey and non-lactating Jersey and zebu cows.

When plotted against environmental temp., vaporization at low air velocity gradually increases with increasing temp. from 18° to 65° then more rapidly to 80°F. when max. vaporization is reached. But when vaporization at high velocity is similarly plotted the rapid increase in vaporization begins nearer 80°F. and continues up to 95°F. In other words, increasing air velocity shifts the vaporization curve to the right, extending the range of physiologically tolerable temp. to a higher environmental temp.

Increasing air velocity reduced the skin and hair temp. roughly in proportion to the decline in environmental temp. The lowering of the surface temp. with increasing air velocity was due to increased convective (rather than evaporative) cooling since increased air velocity did not increase the vaporization rate except at 95°F.

The effect of increasing velocity on evaporative cooling and surface temp. was non-linear, greater on increasing the wind from 0.4 to 5 than from 5 to 9 m.p.h.

VI. Data are presented on the influence of changing wind or air velocity (0.5 to 10 miles per hour) at temperatures of 17°, 50°, 65°, 80° and 95°F on respiration rate, pulse rate, pulmonary ventilation rate, rectal temp., heat production, evaporative cooling from the respiratory tract, and related values on outer surface evaporative and total non-evaporative cooling in Jersey, Holstein, Brown Swiss and zebu cattle.

Increasing wind or air velocity from 0.5 to 10 m.p.h. was found to increase the heat dissipation in cattle at 17°F. environmental temp. (as indicated by increased heat production). Similar increases in air velocity at 50° and

65° had little effect on total heat dissipation; the non-evaporative heat losses were generally greater, but they were balanced by smaller heat losses by vaporization from the respiratory tract and skin. Heat production in Holstein and Brown Swiss cattle was depressed less by 80°F. temp. at high wind velocity than at low wind velocity. At 95°F., wind velocities of 8 to 9 m.p.h. cooled the individual Jersey, Holstein and Brown Swiss cows which had developed high rectal temperatures sufficiently to allow their metabolism to proceed at more normal (less depressed) levels. This was accompanied by less depression of feed consumption and milk production.

At 17°F., air velocities of 8 to 10 m.p.h. increased the heat loss in Holstein, Jersey and Brown Swiss cows to the extent that they increased their heat production by 20 to 35% while maintaining normal rectal temp. Under similar conditions zebu cows increased their heat production by 60% but were unable to prevent a fall in rectal temp. of about 1°F.

At an environmental temp. of 95°F., the individual Holsteins, Brown Swiss and Jerseys which developed high rectal temperatures at 0.5 m.p.h. air velocity were benefited by air velocities of 8 to 9 m.p.h. The lowering of rectal temperatures, in degrees Fahrenheit amounted to about 1.5° at 80° and over 2° at 95° in the lactating Holsteins; 0.75° at 80° and 1° at 95° in the lactating Brown Swiss; 0.5° at 80° and 1.5° at 95° in the lactating Jerseys, and 0.5° at 80° and 0.75° at 95° in the non-lactating Jerseys. The non-lactating zebus maintained approx. normal rectal temp. at all air velocities at 80° and 95°.

VII. Quantitative data are presented on the effects of exposing lactating Holstein, Jersey and dry zebu cows to six radiation intensities ("Variable", 5, 40, 90, 130 and 180 Btu/sq.ft./hour) obtained from combinations of incandescent and fluorescent lamps. Each intensity was of one-week continuous (24 hours/day) duration.

The effects here reported are on milk production, feed and water consumption, and body wt. Increasing radiation intensity did not appreciably affect these reactions at 45°F. air temp. At 70° and 80°F. air temp., however, the lactating Holstein and Jersey cows were increasingly affected by increasing radiation intensity. For example, on increasing the radiation intensity from 5 to 180 Btu/sq.ft./hour (during a 5-week period of constant air temp.) the av. milk yield of 5 Holsteins declined 10% at 45°; 24% at 70°F.; 40% at

80°F.; and av. of 4 Jerseys declined 5% at 45°F.; 14% at 70°F., and 30% at 80°F. Regardless of the air temp., the greatest rate of decline occurred at the highest (180 Btu/sq.ft./hour) radiation level. The non-lactating zebus showed no change in total daily nutrient consumption with increasing radiation at any of the three air temp. levels.

Factors contributing to greater heat tolerance are: large surface area per unit body wt.; light, glossy, short (more radiation-reflective) hair; and lower heat production. These factors help to explain why the Jerseys are more heat tolerant than either of these two breeds.

In addition to the above, more advanced stages of gestation and lactation, greater age and larger size increased the tolerance to the higher radiation intensities at the higher heat exposures.

PERRY, T. W., BEESON, W. M., ANDREWS, F. N. & STOB, M. (1955). **The effect of oral administration of hormones on growth rate and deposition in the carcass of fattening steers.**—*J. Anim. Sci.* **14**, 329-335. **3062**

In a trial lasting 123 days the authors compared the weight gains of control 2-year-old steers on a fattening ration with those of similar animals on the same ration supple-

mented with diethylstilboestrol or hexoestrol or dienestrol diacetate. Diethylstilboestrol and hexoestrol gave highly significant increases in wt. gain (50 and 52 lb. respectively). Dienestrol diacetate produced a smaller but still significant increase (39 lb.)

All 3 substances produced an increase in teat length. At meat inspection grading of the stilboestrol treated animals was inferior to that of the controls and the other experimental animals.—A.S.

YOUNG, G. A., UNDERDAHL, N. R. & HINZ, R. W. (1955). **Procurement of baby pigs by hysterectomy.**—*Amer. J. vet. Res.* **16**, 123-131. [Authors' summary modified.] **3063**

A method is described by which baby pigs were delivered by hysterectomy 2-6 days before term and reared during the early part of their lives in individual isolation units on modified cow's milk. No colostrum or antibiotics were fed. A high proportion of the piglets lived.

The intact uterus was removed from the sows and placed in a sterile compartment; the piglets were then removed from the uterus. The sow, which was anaesthetized with carbon dioxide gas during the operation, was then bled and slaughtered for food.

See also absts. **3092** (book, sheep husbandry); **3093** (book, animal psychology).

TECHNIQUE AND APPARATUS

ENGLEY, F. B., JR. (1954). **Methods of studying the microbial flora of the air.**—*Sthwet. Vet.* **7**, 343-349. **3064**

After a general discussion of the importance of air-borne infections and measures taken to reduce risk in hospitals, laboratories and elsewhere, E. described a number of current techniques for sampling the microbial content of the air.—A.S.

TIDWELL, W. L. & GEE, L. L. (1955). **Use of membrane filter in blood cultures.**—*Proc. Soc. exp. Biol., N.Y.* **88**, 561-563. **3065**

The authors described a technique for the recovery of bacteria from the blood of animals, using a membrane filter. They compared this method with that described by Braun & Kelsh [*V.B.* **24**, 2647] and with the routine blood culture technique.—T. E. GATT RUTTER.

LACEY, O. L. [Professor of Psychology, University of Alabama.] (1953). **Statistical methods in experimentation: an introduction.**

pp. xi+249. New York & London: The Macmillan Co. \$4.50. 31s. 6d. **3066**

This introduction to statistical methods provides students with an outline of experimental designs and their analysis by statistical techniques. The mathematical requirements are well within those of the General Certificate of Education in Great Britain for arithmetic and algebra.

The book begins with an introduction to the aims and limitations of statistics, followed by two chapters on experimental design and interpretation. The introduction of the idea of probability follows in two more chapters and this is continued in three chapters on the normal distribution of data. Tests of significance of means and differences are well covered and in the last chapters there is a slightly more advanced explanation of the Chi square distribution, correlation coefficients, regression and the determination of fiducial limits with a final chapter on experimental design.

Explanations are extremely thorough with a tendency to use a long paragraph where a

simple equation would do. The design of the book is good. Early examples are used in various ways throughout the book to demonstrate the efficiency and appropriateness of the different techniques discussed. Worked examples in each chapter are easy to follow and the problems after each section are relevant to

the previous work. The page layout is pleasing with clear type and no misprints. Useful tables of statistical functions are given in the appendix and there is an index.

While the scope of the book is of course limited it nevertheless provides a very good introduction to the subject.—J. M. LEACH.

See also absts. 2659 (charcoal media for tubercle bacilli); 2667 (mycobacterial virulence test); 2678 (culture medium for *P. septica*); 2748 (media for pleuropneumonia-like organisms); 2789 (purification of fowl pox virus); 2826 (viral techniques); 2832 (double diffusion precipitin technique); 2853-2854 (spraying equipment); 3023 measurement of plasma volume).

MISCELLANEOUS

SBARIGGI, C. (1954). Consideraciones sobre "doping". [**Considerations on the doping of racehorses.**—*Rev. Vet. Milit., B. Aires*, **2**, 243-249. 3067

S. stated that strict supervision was highly desirable in preventing the doping of racehorses while clinical examination of the animals before and after racing and the chemical analysis of samples provided the sole means of ascertaining whether or not horses were doped.

—T. E. GATT RUTTER.

SALERNO, G. (1954). La cura delle fratture della colonna vertebrale con il fissatore esterno di Roger-Anderson nel cane. [**Surgical treatment in three dogs of fracture of the spinal column.**—*Veterinaria, Milano*, **3**, No. 6, pp. 3-9. [English summary.] 3068

An account of the treatment of fractures of the vertebral column in 3 dogs, using the Roger-Anderson technique.

—T. E. GATT RUTTER.

TOMLINSON, A. R. (1955). Wild dogs and dingoes in Western Australia.—*J. Dep. Agric. W. Aust.* **4**, 5-21. 3069

Wild dogs and dingoes are a major problem to stock owners. T. discussed the nature and extent of the problem, the methods for control, and proposed work for the future.

—R. I. SOMMERVILLE.

RUSSELL, E. S. (1955). **Significance of physiological pattern of animal strains in biological research.**—*Brit. med. J.* April 2nd, 826-829. [Author's summary slightly modified.] 3070

The use of inbred strains in biological research is essential for fixation of either phenotype, average grade, relative rank, or reaction to conditions. Examples are presented of each type of strain difference in mice, gleaned from from 1951-53 literature and from research in the Inbred Nucleus of the Jackson Laboratory. These include differences in disease susceptibility, nature of disease produced by a given pathogen, survival time of cold tolerance, reaction to specific toxins; sensitivity to and content of various hormones and reaction to endocrine extirpation; and differences in normal blood-cell levels, life expectancy, and pathological pattern.

REPORTS

— GREAT BRITAIN. (1954). **Report on the Animal Health Services in Great Britain, 1953, including report of proceedings under the Diseases of Animals Act, 1950.** pp. 86. London: H.M. Stat. Off. 3s. 3071

There were 609 outbreaks of ANTHRAX—half the incidence during the previous year—and the average mortality per outbreak was 1.02 among cattle and 1.18 among pigs. Among the suggested probable sources of infection were: — Feeding stuffs in 509 outbreaks, fertilizers in 36, a previous outbreak in 21, and tannery effluent in 13. The Calf Vaccination Scheme for the control of bovine CONTAGIOUS ABORTION was in opera-

tion and more animals were vaccinated than in any one year since its introduction in 1954. The TUBERCULOSIS (Attested Herds) Scheme made satisfactory progress. New registrations amounted to 15,446 herds comprising 451,000 cattle, bringing the total up to 4,154,000 head, i.e., 44% of the cattle population of Great Britain. The proportion of attested cattle to total cattle in the 3 countries was:—England, 35%; Wales, 65%; Scotland, 65%.

There was an abatement in the F. & M. DISEASE epizootic, of 1951-52, the number of confirmed outbreaks being 40 as compared with 495 during the previous year. The majority of these outbreaks were primary cases of which

68% were from swill or from contact with imported meat, bones, etc. Of 25 outbreaks in which the virus was typed, 11 were due to type O, 6 to type A, and 8 to type C. SWINE FEVER was confirmed in 2,713 outbreaks—the highest number in any year since 1940—Yorkshire, the West Midlands and East Anglia being the worst affected areas. The SWINE FEVER Registered Vaccinated Herds Scheme was introduced in December. There were 978 outbreaks of "FOWL PEST" (NEWCASTLE DISEASE)—the highest incidence since 1947—involving the slaughter of 597,632 birds and the destruction of 320,655 hatching eggs at a cost of £465,501 in compensation. The source of infection in six outbreaks of the acute European type was obscure, but ships' swill containing parts of carcasses taken on board at European ports, was suspected. Control measures included slaughter of affected and contact poultry and restriction of movement.

The position with regard to SHEEP SCAB was very satisfactory: there have been no outbreaks since February 1952. There was some improvement in the warble fly situation but non-observance of the Warble Fly (Dressing of Cattle) Order of 1948 was still widespread.

At the Veterinary Laboratory, Weybridge, experiments were made to establish a better method for diagnosis of ANTHRAX in pigs, to facilitate the detection of spores in feeding stuffs and the sterilization of anthrax-contaminated sacks. Activities in connexion with BRUCELLOSIS included Strain 19 vaccine production and experiments on the ring, plate and whey tests. Suspected BRUCELLOSIS in pigs after vaccination with crystal violet swine fever vaccine was investigated and no evidence of infection was found. Dried cultures of each of the 3 type strains of brucella were prepared for distribution on behalf of the FAO/WHO Expert Committee on BRUCELLOSIS. Adsorbed mono-specific sera were made for typing purposes and anti-*Br. abortus* serum for the standardization of antigen was issued to laboratories. JOHNE'S DISEASE was diagnosed in 1,372 herds. The incidence of "latent" infections and the factors affecting the growth of *M. johnei* were investigated. The vaccination field trial continued to give promising results. *M. johnei* was recovered from udder tissue of 2 out of 32 cows examined.

Tuberculin production and work on tuberculin reactions continued. Avian type P.P.D. tuberculin was prepared for the Expert Committee of WHO on Biological Standardization. A Control Scheme for MASTITIS yielded en-

couraging results. PULLORUM DISEASE and *S. typhi-murium* infections in fowls and turkeys were investigated. Three diseases not previously identified in ducks in Britain were encountered: an acute SEPTICAEMIA, a virus disease of young ducklings and ORNITHOSIS (PSITTACOSIS). Among the poultry diseases dealt with by the Veterinary Laboratory, Lasswade, are ROUND HEART DISEASE in fowls and CURLED TONGUE in turkey poults.

Crystal violet SWINE FEVER vaccine was tested for safety and potency. The survey of dairy herds for Q FEVER was in operation during the year. Work on CANINE VIRUS HEPATITIS continued. DISTEMPER in mink was diagnosed serologically and egg-adapted vaccine gave good results.

—T. E. GATT RUTTER.

CANADA. (1954). Report of the Veterinary Director General for the year ended March 31, 1954. [CHILDS, T.] pp. 67. Ottawa: —Edmond Cloutier. 3072

Inspection of meat and meat food products is carried on in some 130 establishments. Livestock imports are controlled by a permit system. Animals must be certified and must come from countries considered to be free from serious animal diseases. They are held in a Canadian Quarantine Station for at least 30 days. Control within the country is based on quarantine, protective immunization, and slaughter. During the year, Canadian livestock remained free from serious disease except for an outbreak of SWINE FEVER in south-western Ontario.

The NEWCASTLE DISEASE situation has continued to improve wherever the approved vaccine has been used. The incidence of RABIES has decreased sharply as a result of depopulation of predators and protective immunization of dogs in threatened areas. The Federal-Provincial programme for control of BRUCELLOSIS has been very successful. Since July 1950, 1,250,000 female calves have been vaccinated. Good progress has been made in the eradication of TUBERCULOSIS in cattle. The work was slowed up by the RABIES and SWINE FEVER outbreaks. EQUINE ENCEPHALOMYELITIS appeared in the Western provinces during the summer of 1953.

ATROPHIC RHINITIS OF SWINE continues to cause concern to the pig industry. It is suggested that unnatural conformation of the facial skeleton in certain breeds of pig is an important predisposing factor and that the elimination of this type of animal is a basic factor in control.

MANGE in cattle continued to be somewhat troublesome. Periodic inspections are made in flocks where SCRAPIE might be expected to appear. It first appeared in Canada in 1945-46.

One hundred and fifty-five permits were issued during the year for the importation of semen.

Under the section on meat inspection, packing houses under inspection are listed, also total inspections, carcass condemnations, foreign meat and products passed for entry, exports, a table listing disease conditions responsible for condemnations, and one giving slaughtering and condemnations at all the plants under inspection.—R. GWATKIN.

ANON. AUSTRALIA. (1954). *The stock inspector. Institute of Inspectors of Stock of New South Wales, Year Book, 1954.* pp. 100. Sydney: The Institute. 2s. 6d. 3073

In his Presidential Address W. B. Harding commented on difficulties in recruiting staff; control of grasshopper plagues with the newer insecticides; MYXOMATOSIS and rabbit control; increased duties concerned with the Cattle Compensation Act; and the increasing use of deep litter systems for pigs and poultry.

Among other subjects discussed were:—An outbreak of COLIBACILLOSIS in poultry with lesions (*Bact. coli* granuloma) morphologically indistinguishable from tubercles of avian TB. and an outbreak of ASPERGILLOSIS in turkeys; HEXAMITIASIS, outbreaks of which have occurred in the Murrumbidgee Irrigation Area; dieldrin for control of BLOWFLY STRIKE in sheep with results of some trials which demonstrate the long lasting protective properties of the insecticide. Sheep are protected against body strike and crutch strike for 3 to 4 months. Dieldrin did not repel or kill the flies but killed the maggots as they hatched from eggs.

METALDEHYDE POISONING occurred in a dog which manifested epileptiform convulsions like "running fits", inability to stand, subdued yelping and abdominal pain. Treatment with "nembital" and castor oil was successful. A case of BENZENE HEXACHLORIDE POISONING in a dog occurred after the dog had spent the day in close contact with a machine spraying the insecticide as a fine mist for control of grasshoppers. The dog recovered without treatment after showing incoordination, a peculiar shuffling, staggering gait, muscular twitchings and opisthotonic convulsions. The dog appeared to be blind for some hours and salivation was profuse. CHRONIC COPPER POISONING may occur when sheep have access to plants

growing in soil with a very high copper content or when plants are contaminated from copper mines or from indiscriminate use of copper sulphate in footbaths for control of foot rot; as a terminal event in some cases of HELIOTROPE POISONING and probably also following liver damage by other plants, e.g. *Echium*, *Senecio*; and most seriously, when susceptible sheep graze pastures dominated by subterranean clover growing in acid soils under favourable seasonal conditions. The disease has occurred widely in N.S.W. and is most common in British breeds and their crosses with the Merino which itself appears to have greater resistance. Adult sheep are more susceptible than growing sheep. Subterranean clover, like other legumes, is richer in copper than grasses. On acid soils the clover has a very low molybdenum content which permits a high rate of storage of copper in the liver.

Heliotropium europaeum is spreading through wide areas of New South Wales and outbreaks of poisoning are increasing. Seven alkaloids have been isolated, but the two chief ones are heliotrine and lasiocarpine. Heliotrine in small doses produces a typical hepatitis; lasiocarpine can produce acute effects, mainly haemorrhagic extravasation. The course of the disease and the development of HAEMOLYTIC JAUNDICE are described. Preventive measures are discussed including pasture management to reduce or eradicate the plant. Methods of husbandry, which employ sheep to control the plant in fallow wheat-growing country favour the occurrence of the disease. Losses are heaviest in pregnant ewes, then ewes with lambs. Acute cases are seen early in the season when the plant is growing vigorously. Subacute cases are seen in mid-season when plants have made maximum growth and sheep are in "store" condition. Ingestion of the dried plant is seldom followed by ill-effects. Overall losses may be from 5 to 30%. Deaths may continue for some months after sheep have been removed from pastures containing heliotrope.

The seeds of *Argemone mexicana* are common contaminants of wheat and when ingested lead to decreased egg production, oedema, depression, ataxia, cyanosis of the comb, haemorrhagic enteritis and death. Heavily contaminated wheat should be sifted to remove the poppy seeds. Lightly contaminated wheat can be fed by broadcasting on the ground—the fowls do not pick up the small poppy seeds.

"NUMINBAH HORSE SICKNESS" begins as an acute oedema of the lungs, followed by haemorrhage. In very acute cases oedema was

so severe that the animal virtually drowned. In some recovered horses a considerable portion of the lung was destroyed and replaced by fibrous tissue. Ingestion of Crofton Weed (*Eupatorium* spp.) is thought to be the cause and it appears that horses must feed on this plant for several months before symptoms occur. The disease is compared with a condition seen in Hawaii and the two are thought to be identical.

Developments in molluscicides are reviewed and some details given of trials with pentachlorophenates. Copper sulphate at 25 to 40 lb. per acre did not give useful results. Sodium pentachlorophenate at 3 lb. per acre gave a rapid kill but was not as effective in total snail destruction as copper pentachlorophenate at 10 lb. per acre.—H. McL. GORDON.

FEDERATION OF MALAYA. (1955). **Report on the Veterinary Department for the year 1953.** [LANCASTER, W. E.] pp. 39. Kuala Lumpur: Govt. Printer. 3s. 6d. **3074**

Freedom from the major infective diseases of cattle was maintained and no cases of anthrax, blackleg, tuberculosis, F. & M. disease or rinderpest were reported.

Sporadic cases of HAEMORRHAGIC SEPTICAEMIA and BOVINE MALIGNANT CATARRH occurred in cattle and STRANGLES was diagnosed in nine horses imported from U.K. MELIOIDOSIS was the cause of 12 deaths in a herd of 150 goats. SWINE ERYSIPELAS accounted for 124 deaths; prompt treatment with specific serum and/or penicillin was considered effective. Numerous outbreaks of FOWL CORYZA were reported and, on one farm, 2,000 chicks died from this disease. There were no outbreaks of pullorum disease.

JAPANESE ENCEPHALITIS was suspected in several instances in racing stables, but the infection did not assume epizootic proportions. The RABIES situation showed a marked improvement with a total incidence of 15 as compared with 21 during the previous year. This state of affairs was attributed to the radical approach to the problem of rabies control by a country-wide application of compulsory vaccination combined with other legally enforced measures. NEWCASTLE DISEASE continued to occur sporadically in unvaccinated birds, but the general situation was considered satisfactory owing to control by vaccination (with attenuated virus grown in chick embryo allantoic fluid).

PARASITISM of stock in general caused appreciable loss of condition and even mortality.

The building of the Veterinary Research Institute was completed during the year thus improving facilities for the preparation of vaccines and sera and for disease investigations. Vaccines prepared included HAEMORRHAGIC SEPTICAEMIA, CONTAGIOUS ECTHYMA, NEWCASTLE DISEASE and FOWL POX. Certain imported vaccines (e.g. RABIES) were tested for viability. Routine diagnostic work was also carried out.—T. E. GATT RUTTER.

LEEWARD ISLANDS. (1954). **Annual Report of the Departments of Agriculture and Veterinary Services for the year 1952. Part I. Report of the Antigua Agricultural Department** [E. R. H. MARTIN] 29 pp. **Part II. Report of the St. Kitts-Nevis-Anguilla Agricultural Department** [R. E. KELSICK] 32 pp. **Part III. Report of the St. Kitts-Nevis-Anguilla Veterinary Department** [A. W. VAUGHAN] 8 pp. **Part IV. Report of the Montserrat Department of Agriculture** [W. E. BASSETT] pp. 15. **Part V. Report of the British Virgin Islands Department of Agriculture** [M. WINTER] pp. 11. Antigua: E. M. Blackman, Government Printer \$2.16. **3075**

Satisfactory progress has been reported in the TUBERCULOSIS campaign and freedom from ANTHRAX has been maintained as a result of the annual vaccination scheme.

The most serious problem has been PARASITISM — internal and external — of all species. A survey and control scheme has been started and results have been satisfactory. Work on canine FILARIASIS has been reported.

Other important diseases of livestock included ANAPLASMOSIS and PIROPLASMOSIS of cattle, MASTITIS of cows and goats, LEPTOSPIROSIS in dogs, EQUINE INFLUENZA and MINERAL DEFICIENCY.—T. E. GATT RUTTER.

SOMALILAND PROTECTORATE. (1954). **The annual report of the Department of Agricultural and Veterinary Services, 1953.** [WATSON, J. M.] pp. 18. [Mimeographed.] **3076**

Drought caused considerable loss of stock. ANTHRAX was widespread and several herds of camels were vaccinated. BOVINE CONTAGIOUS PLEURO-PNEUMONIA was more severe than usual. There was a serious and widespread outbreak of RINDERPEST with heavy mortality. Vaccination of dogs with avianized RABIES vaccine continued.—T. E. GATT RUTTER.

VAN VLOTEN, J. G. C. (1954). **Gezondheidsdienst voor postduiven. Jaarverslag 1953.** [Report on the health service for homing

pigeons in the Netherlands for 1953.]—*Tijdschr. Diergeneesk.* **79**, 347-351. **3077**

During the year 2,711 sick pigeons were treated at the clinic; of these 1,394 were infected with *Trichomonas hepatica*; 329 dead birds were examined P.M. Of 1,062 serum samples examined by the agglutination test for SALMONELLA INFECTION 930 yielded positive reaction. Of 849 serum samples 306 reacted to the complement-fixation test for PSITTACOSIS. Oocysts of coccidia were detected in 825 samples of faeces and eggs of *Capillaria* species in 146. Sixteen cases of infestation with *Echinoparyphium paraulum* were diagnosed in pigeons from western part of the Netherlands.

—C. A. VAN DORSSEN.

ALGERIA. (1954). Rapport du Conseil de l'Expérimentation et des Recherches Agronomiques pour 1953. [Report of the Council for Experimental Agriculture and Research, Algeria.] [BARBUT, M.] pp. 366. Algiers: Imprimerie Officielle. [Items of veterinary interest pp. 261-270.] **3078**

In studies on the hair and wool follicles of sheep it was found that there were two different types of follicle in indigenous Algerian sheep, whereas in Merino sheep all the follicles were similar. Attempts to isolate *Clostridium welchii* from a form of ENTEROTOXAEMIA of sheep known locally as "traï" failed. The inci-

dence and treatment of STRONGYLOSIS in sheep was investigated. Research was carried out into gestation and milk production in cows, gestation in mares, and the action of vitamin B₁₂ on the growth of donkey foals.

—D. S. RABAGLIATI.

FRENCH GUIANA. (1954). Rapport sur le fonctionnement technique de l'Institut Pasteur de la Guyane française et du Territoire de l'Inini pendant l'année 1953. [Report on the activity of the Pasteur Institute of French Guiana and the Territory of Inini during 1953.] [FLOCH, H.]—*Arch. Inst. Pasteur Guyane*. Publ. No. 326. pp. 260. Cahors: Imprimerie A. Coueslant. [Items of veterinary interest pp. 233-238.] **3079**

Outbreaks of SALMONELLA INFECTION killed off both old fowls and chickens by a rapid septicaemia, only a few birds surviving. A heat-killed vaccine was produced which was highly effective and controlled the disease in a remarkable manner. Unfortunately the same good results were not obtained with FOWL CHOLERA or TYPHOID of g. pigs caused by *S. typhimurium*.

Other diseases dealt with were COCCIDIOSIS and *Syngamus trachea* infestation in fowls; and several infections of rabbits, g. pigs and white mice.—D. S. RABAGLIATI.

BOOK REVIEWS

RUNNELLS, R. A. [Head, Department of Animal Pathology, Michigan State College] (1954). *Animal pathology*. pp. xiii+718. Ames, Iowa: The Iowa State College Press. 5th Edit. \$8.50. **3080**

The first part of this fifth edition deals with general pathology, the subjects of the various chapters being: Introduction; predisposing factors of disease; causes of disease; disturbances in the nutrition and growth of cells; disturbances of cell metabolism; death; the defences of the body against injury; concretions; disturbances in circulation; tumours. The second part deals with the special pathology of the body systems—the skeletal and cutaneous systems do not appear in separate chapters—while the third part deals with the pathology of specific infectious diseases, and the fourth part with the special pathology of the food deficiency diseases. In the appendix are discussed *post mortem* technique and *post mortem* changes. There is a good index. Numerous references to the literature are given, and there is a considerable number of illustrations of clear nature and

generous size. Throughout the book, the emphasis is essentially on veterinary aspects of the subject, and functional disturbances are related to pathological processes.

While the book is addressed to an American clientele, veterinary students and practising veterinary surgeons in other countries will find much of value in it. It is improving with each edition, and bids fair to become the best single textbook in English in its field.—E. COTCHIN.

BLOOM, F. [Formerly Associate, Department of Pathology, New York State University, College of Medicine, Brooklyn, N.Y.] (1954). *pathology of the dog and cat. The genito-urinary system, with clinical considerations*. pp. xv+463. Evanston, Ill.: American Veterinary Publications, Inc. \$12.50. **3081**

An outstandingly good book, this monograph is based on long clinical and pathological experience, critically examined and soundly interpreted. Besides full accounts of morbid anatomy and histopathology of the various organs of the genital and urinary systems,

important relevant features of the normal anatomy and histology are described, and physiological and clinical aspects are related to the structural changes. Many excellent photographs illustrate the work; useful lists of references are given, and there is a full index. The book will be essential reading for every veterinary pathologist who deals with the dog and cat, but it will also be of great value to veterinary surgeons in practice, and to experimentalists using the dog and cat. It can be read with profit by veterinary students, and medical pathologists will find interesting comparative aspects referred to.—E. COTCHIN.

- (1954). *The manual of antibiotics 1954-1955. Preparations, therapeutic index, generic and trade names, producers.* [Edited by: WELCH, H.] pp. 87. New York: Medical Encyclopedia, Inc. \$2.50. **3082**

This small book describes American proprietary preparations of antibiotics, listing them under the names of their ingredients and also under their trade names. Where more than one drug is present in a preparation, the proportion of each is given. Preparations used in veterinary medicine are well represented. This book should prove of value to those who deal with current American medical and veterinary literature.—R.M.

- ZEETTI, R. & MARTINI, I. (1954). *Disinfezione e disinfestazione in veterinaria.* [*Veterinary disinfectants and parasiticides.*] pp. xv + 243. Teramo: Editore a cura di "Veterinaria Italiana". **3083**

This book is the first of a series which is being published by *Veterinaria Italiana* and its object is to assist the veterinarian in Italy in the implementation of the New Veterinary Regulations. It is divided into two sections, the first of which deals with disinfection and asepsis, the agents in common use being grouped, according to their mode of action, as natural, chemical, physical and mechanical. The more important infectious and contagious diseases and the recommended disinfectants are conveniently summarized in tabular form. In the second part the authors cover the field of parasiticides and disinfestation on similar lines. The main endo- and ecto-parasites are described and measures for their destruction, elimination and control are discussed. Rat control is dealt with in a special chapter.

This comprehensive manual is presented in a concise form in simple, everyday language avoiding the abstract and purely speculative,

and should prove valuable to veterinarian and stock owner alike.—T. E. GATT RUTTER.

- SCHERMER, S. [O. ö. Professor und Direktor des Tierärztlichen Instituts der Universität Göttingen.] (1954). *Die Blutmorphologie der Laboratoriumstiere.* [*Morphology of the blood in laboratory animals.*] pp. viii + 159. Leipzig: Johann Ambrosius Barth. DM 28.80. **3084**

This very useful book deals with the blood pictures of the rabbit, guinea-pig, rat, mouse, hamster, dog, cat, sheep, monkey, hen, pigeon, and frog.

Sections for each species begin with brief data on the husbandry and the reproductive physiology of the animal, followed by methods of bleeding and estimates of blood volume. Tables giving red, white and differential counts are given, including the work of other authors. The text describes the different cells and calls attention to unusual objects such as Kurloff bodies in guinea-pigs, circulating myelocytes in pigeons, and parasites, such as bartonella in rats and trypanosomes in hamsters.

Data are also given on clotting times, erythrocyte sedimentation rate, fragility, viscosity, blood albumin, blood sugars and the blood groups. The material is based on German clinical methods, thus haemoglobin is reported as a percentage (16g. = 100%) and, to avoid using the mean corpuscular haemoglobin, fractions have been calculated to provide a colour-index for each species. The review is uncritical and red counts are sometimes quoted to 5 significant figures.

The most useful parts of the book are the excellent coloured illustrations (drawn from coloured photographs) for both blood and bone-marrow (rat, blood only) and the biological curves following the injection of a protein substance called "Pyrifer" or following haemorrhage (frog and monkey excluded). The book should be in the library of all laboratories using these animals, but librarians will regret the absence of a stiff cover.—H. H. HOLMAN.

- MOURANT, A. E. [Director, Medical Research Council Blood Group Reference Laboratory, The Lister Institute of Preventive Medicine, London.] (1954). *The distribution of the human blood groups.* pp. xxi + 438. Oxford: Blackwell Scientific Publications. 42s. **3085**

This is an extremely important book. Its first purpose is to bring the data on human blood group frequencies in different parts of the world to bear upon the study of anthropology. But its appeal will be far wider and it sets out in

model form the basis of a world-wide and fundamental investigation on racial studies in man in such a way as to serve as an example for similar work which is undoubtedly called for in animals.

The first seven chapters survey the principal features of the human blood group systems, and comment on other genetical features which can be applied to anthropological study. In the ensuing seven chapters, blood group data from all over the world are presented and applied to the unravelling of man's history in each country; and there is a masterly speculative synthesis in chapter XVII. Three chapters are devoted to serological or mathematical techniques. The evidence on blood groups of animals is but summarized, though usefully so, in one chapter.

The text is not the only useful feature of the book. The bibliography, an astonishing achievement, is invaluable; there are nine blood group distribution maps and 180 pages of blood group frequency tables. It is a work of scientific scholarship in the widest sense.

—G. FULTON ROBERTS.

RAVEN, C. P. [Professor of Zoology in the University of Utrecht] [Translated by DE RUITER, L.] (1954). **An outline of developmental physiology.** pp. vii+216. London: Pergamon Press Ltd.; (New York: McGraw-Hill Book Co., Inc.) 17s. 6d. **3086**

This little book is intended to present the reader who is interested in biology with an easily understood account of developmental physiology. The text concerns itself with fertilization and the structure of the fertilized egg, followed by an account of the differentiation of organs and the later stages of development of the embryo, the newt and frog being mainly used to illustrate the discussion. There is also a glossary and the selected list of references covers the period up to 1952. This book is a helpful contribution to the understanding of the phenomenon of development which is itself the essence of living things.

—J. A. NICHOLSON.

STURKIE, P. D. [Professor of Poultry Physiology, Rutgers University, The State University of New Jersey]. (1954). **Avian physiology.** pp. xx+423. Ithaca, N.Y.: Comstock Publishing Associates; (London: Baillière, Tindall & Cox). 48s. **3087**

The need for a specialized textbook on avian physiology has long been felt so that the appearance of this textbook fills a definite need and is to be welcomed. The author has assumed that his readers are familiar with general mammalian physiology and has confined himself to

the special physiology of the fowl, but has treated his subject on orthodox lines. The different systems are dealt with separately and where necessary brief anatomical descriptions are also given.

There are many gaps in our knowledge of avian physiology, so that at times the text is somewhat sketchy; and the metabolism of proteins, fats and minerals might have received more attention. However, carbohydrate metabolism and reproduction and egg formation are well considered. There is no doubt that the book will be of the greatest assistance not only to the specialist, but also to the more general reader.—J. A. NICHOLSON.

MAY, N. D. S. [Lecturer in Veterinary Anatomy, University of Queensland] (1955).

The anatomy of the sheep. With instructions for its dissection. pp. 167. Brisbane, Q.: The University of Queensland Press. **3088**

There has been a long-felt need for a published account of the anatomy of the ruminant, and the present work fulfils, to a very large extent, such a requirement. It is obvious that a considerable amount of careful work has been performed in the compilation of the detailed text.

The book takes the form of a dissection guide, but in the present edition the head and neck are omitted. These will be included in a later edition.

It is unfortunate that in an otherwise valuable work, lack of accurate description, in a number of places, might tend to confuse the student new to the study of anatomy. Poor definition in the photographic reproductions detracts from their value.—C. SAPSFORD.

TAYLOR, J. A. [Senior Lecturer in Anatomy, Royal (Dick) School of Veterinary Studies, University of Edinburgh] (1955). **Regional and applied anatomy of the domestic animals. Part I. Head and neck.** pp. ix+169. Edinburgh (& London): Oliver & Boyd. 25s. **3089**

This is entirely new work on the comparative anatomy of the horse, ox, pig, sheep, goat, dog and cat, prepared by the Senior Lecturer in Anatomy at the Royal (Dick) School of Veterinary Studies, Edinburgh. Part I deals with the head and neck regions: parts II (limbs) and III (thorax and abdomen) will complete the work and they are in course of preparation.

The author has adopted a unique combination of textbook, dissection guide, and applied and surgical anatomy. About half the

number of pages is devoted to original drawings, many of them coloured, with comments and description on the page facing each diagram. Although this book lacks the detail and accuracy of larger works, it has the advantage of being able to present anatomy in an interesting manner, and enables the student to grasp the practical importance of anatomy in surgery and pathology: it is far removed from the conventional lists of bones, muscles, vessels and other parts. The book is of conveniently portable size and is bound in loose-leaf fashion by spiral wires.—R.M.

- (1954). **Annual review of medicine**. Vol. V. [Edited by : CUTTING, W. C. & NEWMAN, H. W.] pp. ix+490. Stanford, Calif.: Annual Reviews, Inc.; (London: H. K. Lewis & Co., Ltd.). \$7.00. **3090**

This is the fifth annual review of progress in human medicine. Nineteen chapters, the authors of which are authorities in their own particular subject, cover diseases of each of the body systems, anaesthesia, radio-activity, laboratory aids to diagnosis and treatment, toxicology, and allergy. There is also an annotated list of review articles on medical subjects which appeared in the English and American literature during 1953.—R.M.

- (1955). **Gestation**. **Transactions of the First Conference, March 9, 10 and 11, 1954**. [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: FLEXNER, L. B.] pp. 238. New York: Josiah Macy, Jr. Foundation. \$5.00. **3091**

Three papers, read at a symposium on pregnancy held at Princeton, New Jersey, U.S.A. in March 1954, are reproduced in this book, together with a transcript of the free discussion which took place. They are:—the functional role of the placenta, by L. B. Flexner, of the University of Pennsylvania School of Medicine; problems of sugar transport in the placenta of the ungulate, by A. St. G. Huggett, of St. Mary's Hospital Medical School, London; the comparative anatomy and physiology of the placental barrier by E. C. Amoroso, of the Royal Veterinary College, London. All three papers are well annotated and illustrated in part by coloured photomicrographs. There is an appendix consisting of a bibliography on enzymes in the human placenta. The book is very well produced and provides, with its lively discussions, an interesting and informative study of comparative placentology. —R.M.

- MONTILLA, R. D. [Diplomado en Estudios Superiores de Veterinaria y Director de la Estación Pecuaria Regional de Badajoz.] (1955). **Ganado lanar. [A textbook of sheep husbandry.]** pp. xi+408. Barcelona, (Madrid, Buenos Aires, México, Caracas & Río de Janeiro): Salvat Editores, S. A. **3092**

The beginning of the book covers general topics including the economics of the sheep industry, assessment of age, measurement, and methods of marking. This is followed by an extensive section comprising an outline of genetics and detailed descriptions of many breeds, with illustrations.

Chapters on reproduction, husbandry and diet, and on the production of wool, meat and milk complete the book.

There is a bibliography of about 200 references.—A.S.

- HEDIGER, H. [Director of the Zoological Gardens of Zurich]. [Translated by: SIRCOM, G. (1955). **Studies of the psychology and behaviour of captive animals in zoos and circuses**. pp. vii+166. London: Butterworths Scientific Publications. 30s. **3093**

As a director of a zoological garden H. has been concerned to make his animals contented with their captive life, and he has studied life in the wild with minute care in an attempt to discover the chosen habitats and "amenities" of individual species. He brings home to the reader the great importance that a particular kind of rubbing post or wallow hole may have for an animal: wild zebras, for instance, spend a considerable part of the day rubbing themselves against termites' nests, and the provision of a similar structure in concrete was found very beneficial to captive zebras. His book however covers a much wider field than this. Making frequent reference to the work of others he reviews present knowledge on a wide variety of topics, including animals' social relationships with members of their own and other species; flight and escape reactions; relationships between circus animals and their trainers; and the expression of mood. Every subject discussed is illustrated from the author's wide experience in observation and experiment, and many interesting comparisons are drawn from the field of human psychology.

This book can be recommended for its interest to all who are concerned with keeping or handling animals, but it is particularly valuable for its scientific approach: the pitfalls attending an anthropomorphic approach, and of trying to deduce general rules of behaviour

from studies on particular species, are constantly emphasized.

The translator has cleverly avoided the heaviness of style which one usually associates with English renderings of German originals. There is a generous bibliography.—A.S.

—, (1954). **The application of results of research.** [Compiled and Edited by: CONNELL, V.] pp. vii+212 London: Butterworths Scientific Publications. 21s. 3094

This book has the double aim of emphasizing the need within the Commonwealth to ensure that the results of research are quickly put to practical use, and of describing what is already being done in this direction.

One chapter describes the organization of the U.K. Department of Scientific and Industrial Research (DSIR), which came into prominence during the war when the results of research had to be quickly correlated and applied in secret. Since the war the technical informa-

tion services and other services of the DSIR have remained essential in maintaining a liaison between research and practical development in industry, and also in planning applied research.

Another chapter describes obstacles to the use of information, prominent among which is the fact that a research worker, in his published papers, addresses himself to his fellow workers in the same field, and frequently uses language intelligible only to them. Another obstacle is the ingrained conservatism of industrial managements and farming communities.

A short final chapter quotes the conclusion of the British Commonwealth Scientific Conference in Australia in 1952, making recommendations concerning the direction in which scientific development should proceed.

More than two-thirds of the book is given over to appendices describing the organization of research in the Commonwealth countries.

—A.S.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

ADAMSTONE, F. B. & SHUMWAY, W. (1954). **A laboratory manual of vertebrate embryology. Anatomy of selected embryos of the frog, chick, and pig.** pp. vi+98. New York: John Wiley & Sons, Inc.; (London: Chapman & Hall, Ltd.) 3rd Edit. 20s.

BLOND, K. (1955). **The liver and cancer. A new cancer story.** pp. xii+220. Bristol: John Wright & Sons, Ltd. 27s. 6d.

BURTON, A. C. & EDHOLM, O. G. (1955). **Man in a cold environment. Physiological and pathological effects of exposure to low temperatures.** pp. xiv+273. London: Edward Arnold (Publishers) Ltd. 30s.

COLBERT, E. H. (1955). **Evolution of the vertebrates. A history of the backboneed animals through time.** pp. xiii+479. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd.) 72s.

DAVIES, G. O. (1955). **Gaiger & Davies' veterinary pathology and bacteriology.** pp. viii+803. London: Baillière, Tindall & Cox. 4th Edit. 42s.

DONALDSON, F. (1955). **Milk without tears. The essentials of dairy farming.** pp. 192. London: Faber & Faber Ltd. 16s.

FRAZIER, C. N. & BLANK, I. H. (1954). **A formulary for external therapy of the skin.** pp. xvi+118. Springfield Ill.: Charles C. Thomas; (Oxford: Blackwell Scientific Publications). 23s. 6d.

GRAY, P. (1954). **The microtome's formulary and guide.** pp. xii+479. Philadelphia: The Blakiston Co.; (London: Constable & Co., Ltd.) 65s.

GUSTAFSON, B. A. (1955). **Otitis externa in the dog. A bacteriological and experimental study.** pp. 117. Stockholm: Gernandts Boktryckeri. [In English.]

HOMÈS, M. V. (1953). **L'alimentation minérale des plantes et le problème des engrais chimiques. [Mineral nutrition of plants and the problem of chemical fertilizers.]** pp. 142. Paris: Masson & Cie. Fr. 1250.

HONEKER, A. (1954). **Die Krankheiten der Ziege. Heft 4. [Diseases of the goat. Part IV.]** pp. 182+10. Dortmund: Verlag für Kleintierzucht. H. Wellershaus.

HULL, T. G. (1955). **Diseases transmitted from animals to man.** pp. xx+717. Spring-

- field, Ill.: Charles C. Thomas; (Oxford: Blackwell Scientific Publications). 4th Revised Enlarged Edit. 90s.
- KING, N. (1955). **The milk fat globule membrane and some associated phenomena.** pp. x+99. Farnham Royal, Bucks: Commonwealth Agricultural Bureaux. Technical Communication No. 2 of the Commonwealth Bureau of Dairy Science. 15s.
- LEUTHARDT, F. (1955). **Lehrbuch der physiologischen Chemie. [Textbook of physiological chemistry.]** pp. xvi+823. Berlin: Walter de Gruyter & Co. 12th revised edit. DM 42.
- ROBINSON, J. R. (1954). **Reflections on renal function.** pp. 163. Oxford: Blackwell Scientific Publications. (Springfield, Ill.: Charles C. Thomas). 17s. 6d.
- SHEEHY, E. J. (1955). **Animal nutrition.** pp. viii+732. London: Macmillan & Co.; (New York: St. Martin's Press). 30s.
- SVENKERUD, R. (1955). **A study of heat concentrated synthetic medium tuberculin. Preparation, standardization and biological activity.** pp. 249. Copenhagen: Ejnar Munksgaard. Da. Kr. 25.00. [In English.]
- WITH, T. K. (1954). **Biology of bile pigments. Including a review of their chemistry and a discussion of analytical methods.** pp. xiii+523. Copenhagen: Arne Frost-Hansen, Publishers. [In English.]
- (1955). **Neuropharmacology. Transactions of the First Conference, May 26, 27 and 28, 1954, Princeton, N. J.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: ABRAMSON, H. A.] pp. 210. New York: Josiah Macy, Jr. Foundation. \$4.25.
- (1954). **Standard values in nutrition and metabolism. Being the second fascicle of a handbook of biological data.** [Edited by: ALBRITTON, E. C.] pp. xiii+380. Philadelphia (& London): W. B. Saunders Co.
- (1955). **Some physiological aspects and consequences of parasitism.** [Edited by: COLE, W. H.] pp. xi+90. New Brunswick, N.J.: Rutgers University Press. \$2.00.
- (1955). **A textbook of physiology.** [Edited by: FULRON, J. F.] pp. xlii+1275. Philadelphia (& London): W. B. Saunders Co. 17th Edit. 94s. 6d.
- (1955). **Progress in the physiology of farm animals. Vol. II.** [Edited by: HAMMOND, J.] pp. 395-740+xv. London: Butterworths Scientific Publications. 45s.
- (1954). **Toxoplasmose. Forschungs- und Untersuchungsergebnisse aus den Leipziger Universitätskliniken und Instituten. [Studies on toxoplasmosis at Leipzig University.]** [Edited by: WILDFÜHR, G.] pp. 176. Jena: Gustav Fischer. DM 18.
- (1954). **Textbook of organic medicinal and pharmaceutical chemistry.** [Edited by: WILSON, C. O. & GISVOLD, O.] pp. xvi+807. Philadelphia, (London & Montreal): J. B. Lippincott. 2nd Edit. 80s.
- ANON. (1955). **Notice sur l'Institut Pasteur d'Algérie. Tome I. Recherches scientifiques, enseignement et missions; applications pratiques 1900-34. Mission permanente 1900-09. Institut Pasteur d'Algérie 1910-34. Tome II. 1935-49. [The work of the Pasteur Institute, Algeria from 1900-34 & 1935-49.]** pp. viii+374 & 619. Algiers: The Institute.
- ANON. (1954). **Fundamentals of anaesthesia. Prepared under the Editorial Direction of the Consultant Committee for Revision of Fundamentals of Anaesthesia, a publication of the Council on Pharmacy and Chemistry of the American Medical Association.** pp. xvi+279. Philadelphia (& London): W. B. Saunders Co. 3rd Edit. 42s.
- ANON. (1954). **Color atlas of pathology. Endocrine system, including pituitary, thyroid, parathyroid, adrenals, and pancreas. Gynecology and obstetrics, including reproductive organs, breasts, male genital tract, skin. Vol. II.** pp. x+450. Philadelphia, (London & Montreal): J. B. Lippincott Co. 140s.
- ANON. (1954). **Glandular physiology and therapy. Prepared under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association.** pp. xx+611. Philadelphia, (London & Montreal): J. B. Lippincott Co. 5th Edit., completely revised and rewritten. 80s.

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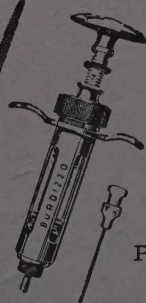
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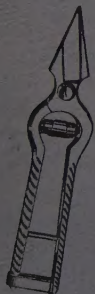
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